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ABSTRACT

Phase I of the Family Development Study was designed as descriptive epidemiologic case-control study of Children's Hospital patients. "Cases" included a variety of presenting conditions in which it was believed that specific factors affecting the capacity of a family to nurture and protect a child under four years of age might form a common and significant part of their etiology. These included cases of child abuse and neglect, failure to thrive, ingestions and accidents. "Controls" were comparable acute medical conditions matched on age, race, and very roughly on socioeconomic status. The study included 303 children on the inpatient division of the Hospital and 257 outpatients visiting its Emergency Clinic. The data generally support the basic hypothesis that differential levels of the several categories of hypothesized stresses and hypothesized personal and social strengths determine the occurence of "social pediatric illnesses" in the families under study. They indicate that child abuse cases tend to be more extreme on the stress-strength variables than the accidents, ingestions and failures to thrive. More importantly there are a suggestions of differences between the various case categories which point the way toward a set of somewhat distinct pathogenetic mechanisms among several of the case categories. (Author/JM)

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DRAFT REPORT OF PHASE I OF THE FAMILY DEVELOPMENT STUDY

Children's Hospital Medical Center

Boston, Massachusetts

September, 1974

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I. ABSTRACT:

Phase I of the Family Development Study was designed as a descriptive epidemiologic case-control study of Children's Hospital patients. "Cases" included a variety of presenting conditions in which it was believed that specific factors affecting the capacity of a family to nurture and protect a child under four years of age might form a common and significant part of their etiology. These included cases of child abuse, child neglect, failure to thrive, ingestions (including lead poisoning) and accidents. "Controls" were comparably acute medical conditions matched on age, race, and very roughly on socio-economic status. The study included 303 children on the inpatient division of the Hospital and 257 outpatients visiting its Emergency Clinic.

A principal objective was to determine the extent to which a set of hypotheses derived from clinical experience and from the research literature and having to do with historical and contemporaneous familial and environmental realities could be verified and integrated into a more nearly etiologic (as opposed to manifestational) classification framework as a basis for a more precise and effective clinical practice. Generation of new hypotheses for further exploration also resulted from this approach. The primary data collection mechanism was an extensive hospital interview with mothers of children selected into the study sample.

The data generally support the basic hypothesis that differential levels of the several categories of hypothesized stresses and hypothesized personal and social strengths determine the occurrence of "social pediatric illnesses' in the families under study. They indicate that child abuse cases tend to be more extreme on the stress-strength variables than the accidents, ingestions and failures to thrive. More importantly there are suggestions of differences between the various case categories which point the way toward a set of somewhat distinct pathogenetic mechanisms among several of the case categories.

For example, accident cases tend to be characterized by high levels of current family stress but without as much history of stress in the mother's childhood as is found in the child abuse cases.

The variables which have emerged as most powerful in discriminating cases from controls are those reflecting disturbances in the present family situation and in the family of origin of the mother.

Although subjective interviewer assessments of the personalities of the mothers and of their relations to the index children sharply discriminated between cases and controls, the hospital interview itself proved to be a comparatively weak device for obtaining a specific picture of the mother-child relationship or of the way the mother and family actually operate in identifying and handling stresses that may threaten the well-being of the child.

For this purpose it appears to be necessary to expand the information base to include more data on several aspects of child, household, and crisis management, as well as actually to observe child, mother, and family in the home setting. This implies both a need for further sharpening of the tools of clinical practice in relation to these disorders as well as for further study employing a broadened methodologic approach.

In the course of the study it has been possible to acquire an amount of practical information on how to obtain cooperation and reliable data from families whose children bear physical symptoms of child abuse and neglect, failure to thrive, accidents, and poisonings, as well as from the hospital professional staff.

By offering advocacy services to families who indicate a desire for help with specific problems which frustrate their abilities to parent their children, the Study derived a more penetrating understanding of the realities of these families' lives and developed a technical methodology quickly and effectively to help them to deal with these problems.

II. INTRODUCTION:

The Family Development Study began in June, 1972, as the Study of Social Illness in Children, supported by a grant from the Office of Child Development, and based at the Children's Hospital Medical Center, Boston, Massachusetts. It was renamed Family Development Study in August, 1972.

As defined in the narrative portion of the original project proposal of November, 1971, the project

> "integrates a descriptive epidemiologic study of the social illnesses of childhood with planning for a controlled investigation into what avenues of intervention make the greatest differences in terms of certain objective indicators of outcome. The descriptive epidemiologic component is a case-control study of social illnesses of children which will allow definition in a community sampling frame, where comparison cases are closely matched with index cases on several parameters, of what "protects" the control child from getting the illness under study. This model will permit controlled, descriptive study of the common substrate from which the illnesses derive, a direct calculation of the incidence of the illnesses and the relative risks of getting them with respect to specific population attributes; and it should generate data for an analysis of what environmental determinants lead to what clinical syndromes. It should also develop understanding of what kinds of intervention might be appropriate in certain family settings, by identifying protective features of family configurations which share other environmental risks. About 1,000 cases a year will be studied in the descriptive study, including all cases in the index community area and all admissions to Children's Hospital of children under four years of age with the following diagnoses:
>
> 1. failure to thrive - 75-100 cases per year.
> 2. child abuse and neglect - 200-250 cases per year.
> 3. pica and lead poisoning - 75-100 cases per year.
> 4. accidents (surgical, orthopedic, and neurosurgical), and ingestions - 400-600 cases per year."

An initial period of refinement of goals, concepts, and methods, coinciding with the organization of the Study and the engagement of its staff, culminated in the pre-testing of the interview for the first phase of the study in November, 1972, and in the commencement of the formal collection of data in both ambulatory and in-patient areas of Children's Hospital in December, 1972. Data collection for Phase I of the Study terminated May 1, 1974.

For reasons which are explained in detail below, the population-based community sampling frame as originally proposed proved not to be workable. The first phase of the Family Development Study, therefore, is a hospital-based, descriptive case-control epidemiologic study of child abuse and neglect, failure to thrive, accidents, and poisonings in children under four years of age, matched for age, ethnic status, and a crude indicator of social class.

Formalized goals, conceptual framework, hypotheses, and the study design derived from a serious review of the problems and needs of clinical practice in respect to these "pediatric social illnesses", review of pertinent clinical, theoretical, and experimental writings, regular discussion among the project staff and our clinical colleagues at the Children's Hospital, and from the critical feedback and positive contributions of several consultants. Continual emphasis was placed on the identification of information which would be helpful in advancing clinical practice; and all study design judgements were subjected to rigorous review in regard to their implications for the care of the particular children and families under study

III. THE PROBLEM:

Important, poorly-understood illnesses and an inadequate rational base for clinical practice.

The present nomenclature of the social illnesses of childhood describes groups of manifest symptoms; it defines neither pathophysiologic mechanisms nor the specific causes of disease because little is known about them.

There is reason to believe that an illness classification scheme oriented to the causes of these syndromes would result in better treatment and would make primary and secondary prevention more nearly possible.

Although a common, undifferentiated causal substrate, including parental personality disturbance little parental education, high parity, and especially, poverty, is generally assumed by professional personnel to give rise to the social diseases of childhood, clinical practice distinguishes several technical approaches to the illnesses, focussing mainly on the expressed symptoms. For example, a child with bruises on his body is identified as a case of child abuse in need of "protective" services; intervention when it is available is customarily individual - directed treatment of his parent while deliberations proceed on whether or not to place the child in foster care. What intervention accomplishes or foster care destroys is often ignored. The criterion of success is "protection" from further inflicted injury, the "cause" of the child's disease. A toddler who presents in an emergency room with an episode of lead poisoning may prompt a review of the physical hazards of his environment. Familial and endogenous determinants of an environment in which a child is inadequately protected are often overlooked in the major thrust of "treatment", removing the immediate threat of harm. Accidents resulting in injuries to children are frequently accepted as isolated, random events, for which no specific intervention is necessary; their causes are usually ignored unless they happen again; and their prevention is not generally a component of pediatric or social service practice. Cases of failure to thrive are often written off as idiopathic (i.e. without identifiable organic determinants) and effectively dismissed from continuing care.

The importance of this group of childhood illnesses is not yet fully appreciated. It is probably great. The lack of a more etiologic taxonomy of illness and a methodology for treatment oriented to the causes of these problems and to their prevention may be responsible for an important amount of subsequent adult dysfunction.

Child abuse is a case in point. Its precise incidence is unknown. In the children for whom the diagnosis is made, however, the known impact on their growth and development is such as to suggest an enormous toll in lost physical and intellectual functioning. (Elmer, 1967; Holter and Friedman, 1969; Martin, 1971). A considerable literature of historical retrospective studies of juvenile offenders and violent criminals indicates an important association with an antecedent history of child abuse (Ilfeld, 1969; Steele, 1971; Duncan, 1958; Bender, 1959). Violence, in effect, breeds violence. Methodology for intervention in child abuse is usually based on the notion that there is a caretaker who has intentionally perpetrated the injury (Fontana, 1971; Helfer and Kempe, 1969). Therefore, removal of a child from the dangerous home is virtually a matter of routine in many cities; the long-term results for the child and his family may be disastrous.

Results of studies of the prevalence of child abuse, using records of reported cases, are inconsistent with regard to an association with poverty (Kempe, 1970; Gil, 1971). The association is not proved, and in view of some indirectly acquired data on the incidence of child abuse, may not exist, except insofar as poor children's injuries may be more likely to be characterized as signs of child abuse and reported to the authorities. (Newberger, 1971; Newberger, 1973a; Helfer, 1971). Psychiatric studies of the families of abused children disagree on the prevalence of personality disturbance among the parents of these children (Steele, 1969; Melnick and Hurley, 1969). It is generally agreed that intervention in cases of child abuse is difficult, and the yield in terms of adequate growth and development of the children in question is poor (Elmer and Gregg, 1967; Martin, 1972; Kent, 1973). A more precise conception of illness and an understanding of what constitutes adequate intervention will depend, in this particular childhood disease, on a scientific description of the phenomenon,

a better understanding of its origins, and an analysis of how and why treatment works. Because the number of middle and upper-class cases is not known but seems to be great, the selection of children from poor homes, as other investigators have done, would bias the data for analysis to a great degree. This important methodologic question is discussed elsewhere. (Newberger, 1971).

For the other childhood illnesses in this group, there is also an important prevalence in middle and upper-class homes. Although the importance of failure to thrive in terms of subsequent growth and development is less fully understood (Glaser, 1968; Barbero et al, 1968), the impact on a developing child of accidents and ingestions is known to be enormous. (American Academy of Pediatrics, 1972). If a major index of health is morbidity and mortality, then accidents are among the most important causes of diminished productivity and human suffering in the United States. They are the principal cause of death to age 40 and account for upwards of 10% of all pediatric hospital admissions (Haddon, 1964).

A principal reason why the descriptive studies of child abuse, failure to thrive, accidents, and ingestions offer little insight into their complex environmental and developmental determinants is the inadequacy of the investigative methodology which has been brought to bear in studying the problems. Among the defects of the studies published to date are too narrow conceptual notions of illness, undiscriminating techniques of case identification and selection, absence of comparison groups, samples too small for testing of statistical significance, and the consistent notion that a child is a passive and unstructured recipient of environmental stresses.

Clinical practice, to the extent that it is documented in the literature, seems often to bear no consistent relation to case outcome for this group of illnesses. The reasons are summarized in outline form below:

A. Poorly conceptualized and differentiated taxonomy of illness.
   1. inadequate cause-effect concepts implicit in clinical definitions of phenomena.
      a. child abuse and neglect (notion of parental intention)
      b. accidents and ingestions (concept of events as isolated, random occurrences)
      c. failure to thrive and pica (magical transformation of environmental deprivation into physical symptoms)
   2. static models of illness, describing only symptoms of illness at point of diagnostic ascertainment.
   3. notion implicit in current taxonomy that the child is an unstructured, passive recipient of environmental stresses.

B. Untested set of assumptions re: intervention.
   1. major <u>quantitative</u> assumption: clinical outcome varies directly with the amount of professional energies committed to a case.
   2. major <u>qualitative</u> assumption: clinical outcome varies directly with the amount of training and skill of the technicians offering treatment.
   3. <u>other assumptions</u>:
      a. all families, irrespective of race, social class, and culture, are accessible to the proffered means of intervention.
      b. a coordinated, diverse investment of services is more effective than a simple approach to intervention.

C. The nature of case selection makes it impossible in practice to distinguish which cases respond to what treatment and why.

a. psychotherapy models predominate: to participate requires an amount of motivation and intactness.

b. no published studies of intervention confront the bias of selection whereby cases which are likely to respond to the methodology under study are preferentially selected for intervention.

IV. GOALS OF THE FAMILY DEVELOPMENT STUDY:

A. Refinement of Understanding of Illness Manifestation and Etiology:

1. Emphasis on stresses which impinge on families and their strengths in dealing with them.

2. More precise definition of processes of cause and effect which culminate in pediatric social illnesses.

3. Development of new and more accurate illness classification which will identify behavioral and environmental dimensions of the problems in addition to physical symptomatology.

B. Development of Better Diagnostic Instruments:

1. To permit sharper and more valid identification in practice of the family problems associated with child abuse, neglect, failure to thrive, accidents, and poisonings.

2. Better to equip professional personnel and institutions effectively and humanely to offer services pertinent to families in distress.

3. To understand the implications and complexity of screening for risk for child abuse. (To identify what strengths protect asymptomatic children in high risk families; and what factors of stress are associated with the occurrence of child abuse in "low risk" families).

C. Development of Strategies of Support to Families in which Pediatric Social Illness Occurs:

1. To enhance their strengths.

2. To minimize their stresses.

3. Formally to develop clinical tools which will operate effectively on the etiologic substrate underlying pediatric social illness.

   a. Parent education

   b. Advocacy

4. To develop methods of assessing the effectiveness of the parent education and advocacy intervention modalities in relation to other techniques of family support.

D. Anticipated Long Term Consequence (Not Susceptible to Formal Evaluation): The Improvement of Institutional Practice

1. Development of understanding of the complexities of effective interdisciplinary case management.

2. Institutional evolution, with emphasis on the development of commitment to family service, acceptance of interdisciplinary approaches to child development problems, acknowledgement of such innovative techniques as advocacy and parent

education, and promotion of programs which will enable more sensitive and effective practice oriented to the causes of illness rather than to their symptoms.

E. Other Possible Implications of Project

One would hope that as the causes of the social illnesses of childhood are illuminated and as ways of prevention and intervention are developed, community institutions would respond in adapting methods of perception and treatment as well as specialized and unspecialized personnel more appropriately to the needs of their patients and clients.

If, as is likely, the important environmental determinants of adult dysfunction, including violent responses to the stresses of life, can be more or less precisely identified in childhood, then fundamental, causal prophylaxis should be possible. Present modalities of psychiatric intervention do not allow intercepting illness close to its cause, except insofar as children are indirectly benefited by whatever functional improvement prevailing techniques may bring to their parents. Personal (individual) psychotherapy cannot, except indirectly, and for small numbers, identify the primary environmental components which predispose to illness. Epidemiologic methods are better suited for this purpose. For children especially, whose personalities are significantly formed by the time they begin school, environmental and familial - as distinct from individual - causes of dysfunction may most efficiently be defined and controlled early. American service and educational structures do not-- again, except indirectly, as siblings and parents are affected -- generally affect a child in the critical years between birth and school. The development of his personality is therefore profoundly affected by whatever quality of life is to be found in his home.

If a child from a troubled home is enrolled early and regularly in a day-care setting propitious to his development, he is singularly fortunate, for too few such resources are available. Should there be a catastrophe in his life which leads his family to contact with an institution which can offer shelter in crisis, a deficit in his development may be perceived and compensated, but it often requires such a calamity to identify a child and a family in need of help.

This project undertakes to focus on the home setting as the natural, logical resource for the successful nurturing of a child. Preventing social illnesses will primarily be accomplished here. The nuclear family shall likely remain the archetypal model of child-rearing in our social system. Identifying the causes of its weaknesses in epidemiologic perspective and developing ways of sustaining its strengths to nurture its individual offspring should contribute initially to our competence to deal with the health needs of children. Ultimately and by consequence, it should improve our ability to prevent disturbed adult behavior as well.

At the present time, we do not know whether contact with a hospital can make an important impact on a family's competence to parent its offspring. There is, however, evidence to suggest that a medical setting is a favorable entry point for disturbed families who for various reasons cannot utilize other service-providing resources. Medical personnel may be perceived by families and are committed in theory to professional practice which is less "judgemental" than that which one might encounter, say, in court or at school. Institutions like Children's Hospital have diverse technical functions, among which are a social role that by tradition is low-key, directly helpful and unintimidating. Bronfenbrenner among others have noted that many American institutions, including hospitals and schools, tend to drive families apart. One would hope that the development

of more precise diagnostic tools and more accurate and effective action on the causes of social illness would help bring parent and child together and provide a framework to see how certain kinds of family intervention make a difference for the child.

It is also hoped that this program will advance the care for hospitalized children by its developing a competent mechanism through which the experience of contact with the hospital may be perceived as an important event in a child's development and, where necessary, utilized as the starting point for a program to support his nurturing environment.

V. RESEARCH STRATEGY:

A necessary first question for a descriptive epidemiologic study of illnesses assumed to have multiple causes and multiple manifestations has to do with which hypotheses are most important. To answer this question obliges the development of a formal conceptual organization. The theoretical framework for the study, which includes a simple conceptual model, follows in outline form below.

The strategy in this study is to treat each of the single hypotheses deriving from this conceptual organization, which have to do with various manifestations of historical and contemporary familial stress and strength, as both unitary dimensions and as elements in more complex associations.

Cause-effect inferences, or, more properly for an epidemiologic study, estimates of risk, are drawn from differences between "cases" and controls on certain attributes and groups of attributes. These data are drawn from specific questions dealing with events, experiences, and feelings which are organized in a closed-ended interview which also gives an opportunity for subjective observation on certain affective expressions and processes.

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Summative data on the salient attributes of the several categories of "cases" (child abuse and neglect, failure to thrive, accidents, ingestions, and pica) and 'controls" (children of similar age, ethnic status and social class) are compared.

Theoretical Framework

1. Assumptions: Parental experience, child experience, and parent-child interaction are the salient dimensions for understanding child development and its disturbances, and for understanding the child in the family context.

   a. The Parent:

      1. One's historical experiences of the environment affect one's ability to cope with contemporary life events and circumstances.

      2. One's ability as a parent to protect and nurture one's child reflects one's sense of self (efficacy) and one's sense of others (empathy).

   b. The Child:

      1. The child is active.

      2. The child has a basic need for nurturance and protection, which must be met if the child is to be able to actively explore and experience the environment.

      3. The child's exploration of the environment and interaction with others is the process by which he or she develops a sense of self, of the world, and of others.

   c. The Interaction:

      1. The quality of the parent-child interaction depends fundamentally on the extent of reciprocity existing between parent and child.

2. This reciprocity derives from the parent's ability to acknowledge and understand the needs and perspective of others, and from the child's responsiveness and activity.

2. Conceptual Model: Integration of assumptions, formulation of fundamental questions and hypotheses are prerequisites for research.

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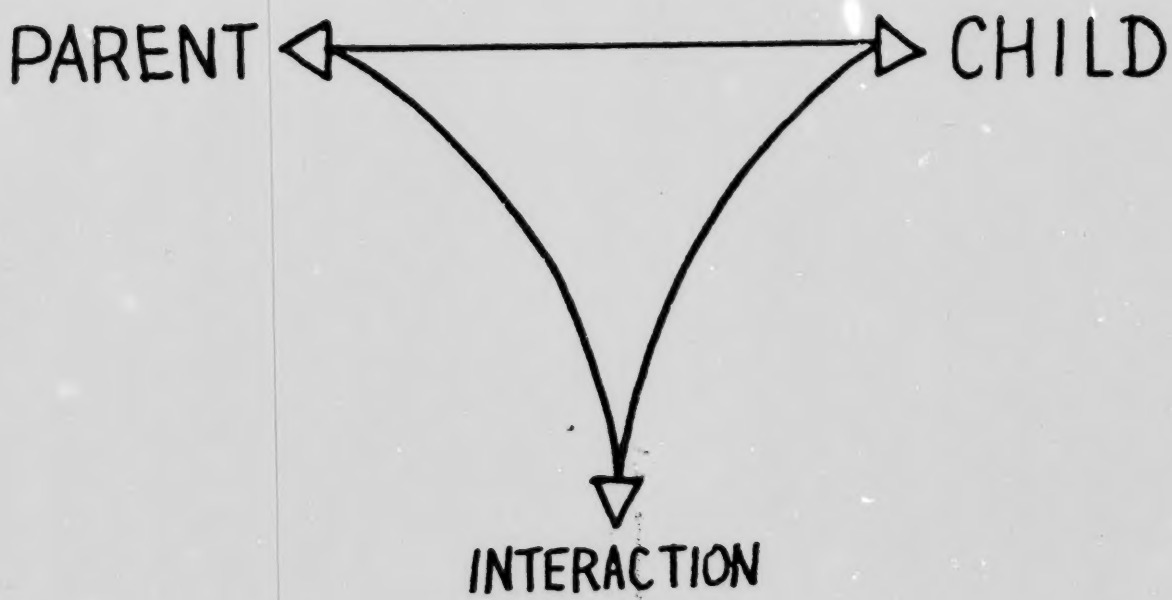
CONCEPTUAL MODEL FOR PHASE ONE OF THE FAMILY DEVELOPMENT STUDY

EACH PAGE REFLECTS INCREASING COMPLEXITY AND SPECIFICITY



Parental experience, child experience and parent-child interaction are the salient dimensions for understanding child development and its disturbances, and for understanding the child in the family context.

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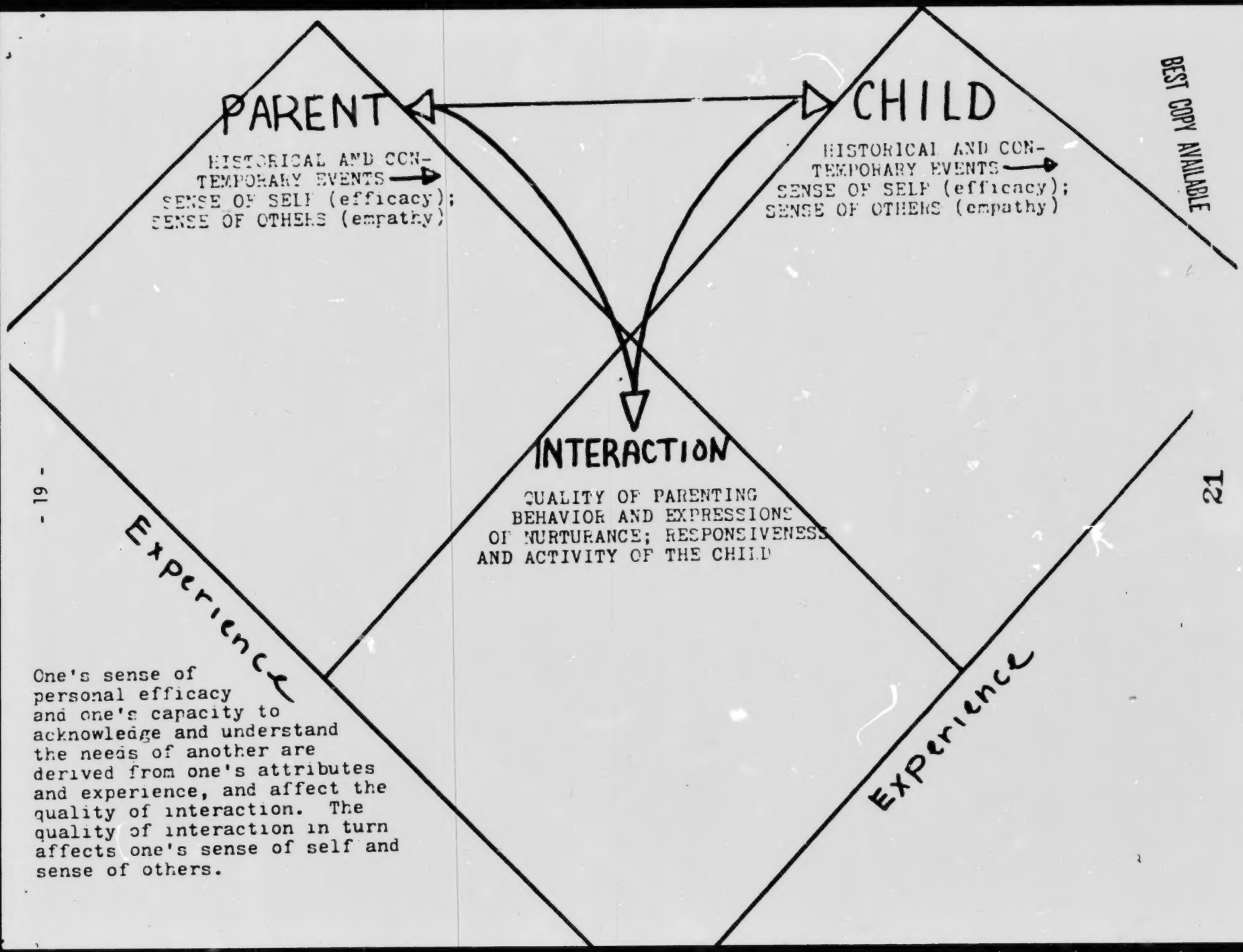
Parental experience and child experience occuring simultaneously in time and space is characterized as interaction. Experiences and attributes of the parent outside the context of interaction affect the child. Experiences and attributes of the child outside the context of interaction affect the parent.



One's sense of personal efficacy and one's capacity to acknowledge and understand the needs of another are derived from one's attributes and experience, and affect the quality of interaction. The quality of interaction in turn affects one's sense of self and sense of others.

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a. The Parent:

1. What environmental forces are impinging on the parent/s' lives? How does parent experience these forces? To what extent does she/he feel able to cope with them?
2. What stresses is the child presenting? To what extent does the parent feel able to cope with them?
3. What medical and physical stresses is the parent experiencing?
4. What emotional stresses are impinging on the parent/s' sense of well-being? How does parent experience these forces? To what extent does she/he feel able to cope with them?

b. The Child:

1. What are the constitutional (physiological) limitations of the child?
2. Is the child manifesting age-appropriate behavior?
3. What restrictions does the physical environment place on the child?
4. How can the child's emerging sense of self be characterized?

c. The Interaction:

1. Is there a reciprocal quality to the parent-child relationship?
   a. What demands does the parent place on the child?
   b. What demands does the child place on the parent?
   c. How does the parent respond to child's activity?
   d. How does the child respond to parental handling?

VI. HYPOTHESES:

Child abuse and neglect, pica and lead poisoning, failure to thrive, accidents and ingestions derive from a common etiology. This etiology includes elements of historical and contemporaneous stress.

Historical stresses will be defined as stresses occurring in the life of the caretaker up to the time of the conception of the index child.

Contemporaneous stresses will be defined as stresses which have occurred in the caretaker's life since the conception of the index child. These stresses include environmental, family, marital and health problems, as well as stresses which originate in the unique attributes of the index child.

HISTORICAL STRESSES:

Case caretakers will articulate personal histories characterized to a greater extent than control caretakers by the following attributes:

1. History of broken family (through separation, divorce, or death of significant family members).
   a. In caretaker's childhood.
   b. In caretaker's adulthood (up to the time of conception of the index child).
2. History of mobility (frequent moves and/or significant changes in life patterns).
   a. In caretaker's childhood.
   b. In caretaker's adulthood (up to the time of conception of the index child).
3. Childhood history of violence or neglect from caretaker's caretakers (up to age 16).

4. History of ill health or physical problems.
   a. In caretaker's childhood.
   b. In caretaker's adulthood (up to the time of conception of the index child).
5. History of mental illness, drug dependency, or alcoholism in caretaker's family.
   a. In caretaker's childhood.
   b. In caretaker's adulthood (up to the time of conception of the index child).

CONTEMPORANEOUS STRESSES:

Stresses in the life context of the caretaker: Family, Marital and Environmental Stresses:

Cases are more likely than controls to experience the following contemporaneous environmental, family, and marital stresses:

1. A language which differs from that of the general population.
2. Low educational level.
3. Problems with housing.
4. Crowded living quarters.
5. Isolation.
6. Frequent moves or a recent move.
7. Unemployment.
8. Frequent or recent job changes.
9. Unsatisfactory employment situation.
10. Legal problems.
11. Financial problems.
12. Ill health in family.
13. Drug dependency in family.
14. Alcoholism in family.

15. Divorce, separation, death or recent break-up in significant relationship.
16. Marital difficulties of difficulty with other significant relationship.
17. Unwanted child(ren) or too many children.
18. Friction with own family and/or in-laws.
19. Being a single parent.
20. Living in nuclear (small, as opposed to extended) family.
21. Absence of external family supports.

Stresses deriving from health problems the caretaker experiences:

Case caretakers are more likely than control caretakers to experience the following health problems:

1. Ill health (medical,dental problems).
2. Difficult pregnancy or delivery with post partum depression.
3. Birth control difficulties.
4. Mental retardation or obvious mental illness.

Stresses deriving from the unique characteristics of the index child:

Case caretakers are more likely to experience the following stresses related to the index child than control caretakers:

1. Child unwanted.
2. Difficult pregnancy or delivery with index child.
3. Child born prematurely.
4. Critical separation from child.
5. Caretaker displeased with sex of child.
6. Child evokes negative symbolic referents in caretaker.
7. Child has health problems or motor problems.
8. Child perceived as difficult by caretaker; caretaker expresses negative feelings towards child.

VII. Sampling Strategy and Definition of Cases and Controls

A. Nature of Sample

Subjects in the study were children below the age of four who utilized the inpatient and outpatient services at the Children's Hospital Medical Center. Cases were designated as children who exhibited designated "social illnesses" while controls were children who had other illnesses.

B. The Sampling Problem

The original plan to identify all cases of the aforementioned diagnoses in a geographically circumscribed index population which would be broadly representative of the social class and ethnic make-up of Boston was rejected as impractical for many reasons. This decision meant that a house-to-house search for "social illnesses", including physical abuse,could not be conducted and that therefore neither a true differential incidence measure of physical abuse nor a direct calculation of risk for social pediatric illness in respect to any population attribute could be made. But the extent to which the results of the study could be generalized remained a continuing concern. The ascertainment bias implicit in case report complications and in hospital-based case series necessitated a serious examination of every strategy to master the problem.

Two alternatives in addition to the house-to-house search were explored in the summer of 1972:

1. To identify a well-defined "catchment area" and, through contact with all its care-providing resources, to generate a sample more nearly representative of the utilizers of the health and social service system of the Boston area with probably a larger number of middle-class cases than might have been ascertained at Children's Hospital alone. (One possibility included a suburban hospital which nearly never reports incidents of child abuse, despite its active pediatric service,and the

voluntary health and family service agencies which are active in the community served by the medical referral center.)

2. To select a group of accessible "cases" and "controls" at the Children's Hospital Medical Center and to identify with some precision their geographic location and to characterize their utilization of community health and social services with a view to documenting and explaining how they happened at this time to be coming for care at the Children's Hospital.

These alternatives were discussed with respect to what was originally conceived as a general research goal, determining once and for all the relationship between social class and child abuse.

Both the "house-to-house search" and "catchment area" alternatives were found unacceptable for a variety of practical and political reasons. First, it was soon obvious that there would be pressure from a number of sources who would deny the existence of child abuse and neglect in certain areas or who would seriously question the value of the study's findings and its implications for their communities. (At a later time, in December, 1972, at a meeting with members of the Community Research Review Committee at the Boston Black United Front, it became clear that such a strategy would indeed have been unacceptable to leaders of the Boston Black community as well.) Second, the likelihood of cases being diagnosed and reported as child abuse or child neglect at the suburban hospital was known to be very small. Third, there were serious constraints of time and resources. The "catchment area" plan would oblige enourmous expenditures of staff time and energy in making contacts and developing working relationships with people in the various community agencies in order to elicit their support in getting access to "cases".

In a July, 1973 memo Dr. Reed identified three issues concerning the sampling alternatives, in which he addressed the problems of defining a population of children served by Children's Hospital, of measuring the incidence of child

abuse and similar phenomena, and of assessing their differential distribution in upper and lower class children. This paper is attached as Appendix A.

Discussion of the available alternatives led to a decision not to attempt to calculate the incidence of child abuse in a community, nor to determine whether or not there is a direct causal relationship between low social class and child abuse. The study would rather focus on children served by the Children's Hospital in order better to understand "what protects the control child from getting the illnesses under study," in the words of the original proposal. The extent to which the results of the study could be generalized would indirectly be inferred, it was concluded, by generating a sample from two different areas in the Hospital, which were felt to serve somewhat different ethnic and social class populations. In the Emergency Room, episodic primary medical care is delivered to a large, indigent inner-city population as well as acute and urgent medical and surgical service both to the former group and to children from the greater Boston metropolitan area. Most cases of child abuse and neglect as well as many accidents and cases of failure to thrive come through this portal. The decision to admit such children is based on a tentative diagnosiic formulation in the Emergency Room. It is here that a discrimination is made between "child abuse" and "accidents", which may figure importantly on who gets admitted (for protection as well as for medical treatment) and who gets sent home.

Sampling cases from both the Emergency Room and from the Children's Hospital inpatient services would also permit a look at how patients are processed through the Hospital system in relation to the classification of their symptoms.

In the Emergency Room the presenting complaint (as given by the mother) would determine whether a child would be a "case" or a "control" and eligible for interview by the study. On the inpatient services, the

diagnostic formulation made by the physician in the emergency room or, should the child have been referred in from another medical provider, the admitting diagnosis, would be the basis for selection.

Ascertaining cases from both service areas would provide an opportunity to study "cases" not labeled abuse and neglect as they presented for care in the Emergency Room as well as "cases" identified as victims of child abuse and neglect on the inpatient services. This would give an impression of the extent to which professional diagnostic inference bore a relationship to the data on a child and family, in order more to adequately clarify the relationship between symptom classification and illness etiology. It would also permit, it was anticipated, a characterization of whatever selective process appeared to operate to make some children from certain social and geographic origins preferential candidates for certain treatment patterns which would limit the extent to which generalization of the Study's findings could be made, say, from the inpatient population.

Two small studies were performed in the summer of 1972 to illuminate the nature of the inpatient and outpatient populations and to give information on the actual numbers of cases, and on the available matching attributes in the pool of potential controls. One study was a thorough retrospective review of the records of 311 inpatient "cases" and "controls" matched for age, sex, and admission date. The other was a 4-day observation of the Emergency Room. Some of the key findings are summarized below.

1. In-Patient Study

This was a retrospective case-control study of data in the hospital records of children admitted to Children's Hospital from July 1, 1970 to June 30, 1971. 311 Children with "social illness" diagnoses were ascertained as cases; controls were matched on age, sex, and admission date.

Relatively more white and middle class children were seen in the "accident" and "failure to thrive" case categories, while a larger representation of

non-white and poorer children prevailed in the other "social illness" diagnoses. Nearly half of the cases lived in the urban Boston area, where approximately half of the controls lived in the suburbs. There appeared to be a clustering of children in particular age groups into certain diagnostic categories; the victims of child abuse and failure to thrive were notably younger than children bearing diagnoses of accidents and ingestions. Behavioral data was frequently absent in the records. Demographic data was inconsistently collected. It appeared that no accurate match on social class could be derived from the information available in the hospital record. Results of this study were published in abstract form in the Proceedings of the 1973 Annual Meeting of the Ambulatory Pediatric Association (Appendix B).

2. Emergency Room Observation

This study was conducted to observe patterns of information collection, to document the flow of potential cases and controls, and to assess the implications of routine emergency room procedures for subsequent interviews and observations. Observers were placed in the emergency room on a round-the-clock basis. Patient counts, waiting periods and staff interactions were documented. Mothers tended consistently to accompany their children to the emergency room, and black children and their mothers were often accompanied by other relatives and friends. Black families also appeared more frequently to use the facility as their source of primary pediatric care. Over 80% of the children observed in this study had previously been seen in the Emergency Room. The log sheets (which note specific presenting complaints, age, diagnosis, and treatment plan) were filled out inconsistently, depending on patient flow at the time of entry. There appeared to be approximately equal representation of black and white families, and of male and female children under the age of four. Time trends in case presentation and length of waiting periods were documented.

From the Emergency Room log sheets it was estimated that about 15%, or 11,106 of 74,013 total annual emergency room visits might be diagnosed as "social illness". Accidents were the most frequent of these diagnoses. About 30% of the children who visited the emergency room between October 1, 1970, and September 30, 1971,were under the age of four. For the outpatient population, the potential control pool was estimated to be 5 to 6 times as large as the case group.

Probability calculations from the data on the inpatient and outpatient sampling pools indicated that a feasible number of matching cells on elements of age, social class, and ethnic group status would be 20.

C. "Inpatient" and "Outpatient" Definitions

Inpatient:

1. All patients admitted to inpatient service directly through the admitting office.
2. All patients admitted to inpatient service directly from an outpatient clinic.
3. All patients admitted to inpatient service as transfers from another hospital.
4. All patients seen as Emergency Room outpatients and admitted from the Emergency Room to inpatient service.

Outpatient:

1. All patients admitted to Emergency Room and sent home without being admitted to an inpatient service.
2. All patients admitted to Emergency Room and who are referred for follow-up to another outpatient clinic.
3. Outpatients seen in outpatient clinics other than the Emergency Room were not included as subjects in the Family Development Study.

D. Case and Control Definitions

Outpatient

Case: Any child less than four years of age who comes to the Emergency Room of C.H.M.C. with a chief complaint of "ACCIDENT" or "INGESTION". Accidents encompass the following complaints:

falls

fractures

lacerations

automobile accidents

bumps

burns

bruises

dislocations

drownings

head injuries

contusions and crushing injuries

sprains and strains

other injuries and trauma

The category of ingestions refers to chemical, foreign body or drug ingestions. Return visits for follow-up of prior accidents or ingestions are not eligible for selection as cases.

Control: Any child of less than four years of age who comes to the Emergency Room of C.H.M.C. with a chief complaint other than those which are defined as cases. Return visits for follow-up of any prior complaint are not eligible for selection as controls.

Inpatients:

Case: Any child of less than four years of age who is admitted to an inpatient service at C.H.M.C. and who has a diagnosis of

one or more of the following illnesses:

child abuse

child neglect; maternal deprivation;

psychosocial deprivation;

psychosocial dwarfism

lead poisoning

pica

failure to thrive (except where due

a primary organic process)

Accident

Ingestion

The diagnostic criteria are:

1. Failure to Thrive: Syndrome in children under four years of age who have no perceptible organic cause for being under the third percentile for height and weight.
2. Child Abuse and Neglect: Where injury has been inflicted on a child, or where his or her survival in the home setting is in such doubt that medical or legal intervention is necessary.
3. Pica and Lead Poisoning: Demonstrable and obsessive craving for non-food substances; or blood levels over 50 mcg. and /or excretion of urinary lead after provocation EDTA chelation over 500 mcg./24 hours.
4. Accidents: Admission for care of traumatic injury.
5. Ingestions: Admission for care of mouth ingestion of non-food substance.

Control: Any child of less than four years of age who is admitted to an inpatient service at C.H.M.C. Where possible, children bearing diagnoses of chronic diseases are excluded from

consideration as controls. Return visits for prior trauma or other "caseness" (burn grafting,etc.) are excluded from the control population. Terminally ill children are not considered as controls. Organic failure to thrive cases are considered as controls.

VIII. Matching of Cases and Controls

The comparison group of children from both Emergency Room and inpatient service of Children's Hospital was matched with cases at the outset of the Phase I data collection on the following criteria:

1. Age: 0-18 months
   19-30 months
   31-48 months

2. Ethnic Group: Black
   White
   Other (Including Spanish speaking minorities)

3. Welfare Dependency: Yes
   No

(Welfare dependency was determined by "Source of medical payment". This was to be an index of socioeconomic level for matching purposes although it was acknowledged as somewhat less than ideal. It was the only accurate information related to social class other than census tract available at the time of a child's presentation to the hospital). This matrix defined 18 manageable matching categories.

In July, 1973, a preliminary analysis was conducted on the data collected from 296 interviews. These included 91 inpatients (51 cases and 40 controls) and 205 outpatients (107 cases and 98 controls).

The analysis of data indicated that there were potentially significant discrepancies related to age between cases and controls under nine months, more evident among whites, raising a possible problem in confounding with age. For future analytic purposes, the matching category "under 18 months" appeared too broad. The matching age groups were then expanded to four by dividing

the first category into 0-9 and 10-18 months.

It also became clear at this time that the socioeconomic variable "source of medical payment" - welfare dependency - was not sufficiently discriminating and left a wide range of socioeconomic variability uncontrolled. Thereafter, source of medical payment was dropped as a matching criterion.

In July, 1973, the matching criteria became:

1. Age: 0-9 months
   10-18 months
   19-30 months
   31-48 months

2. Ethnic Group: Black
   White
   Other (Including Spanish-speaking)

So they remained until the Phase I data collection terminated on May 1, 1974.

IX. Interviews and Observations

A. The Interview:

The principal instrument for Phase I of the Study was an interview. A copy of the interview is attached as Appendix C. The interview conducted at the hospital was tape-recorded. A Q-sort formulation of the character of the respondent was performed both by the interviewer, who also coded her interview, and by another interviewer.

In this interview, the mother was asked to describe both specifics and generalities of her life experiences and those of her child. It was basically a contemporaneously focussed instrument delving into the environmental situation in which the child and mother were living, including housing, marital, financial, legal, family, health, work, and educational aspects. From the mother's description of her situation, an understanding of the current and recent stresses in her life and in the child's life emerged. Historical areas of the mother's past and the child's past and current development were also explored.

The following considerations influenced formulation of the descriptive epidemiologic interview:

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1. Practical: The alternative to an interview for collecting descriptive information is a questionnaire. This method of data collection depends fundamentally on the respondent's ability to read and understand the questionnaire. Particularly in population groups that include persons with only grammar school levels of education, it is difficult to evaluate the extent to which replies to questionnaire questions are functions of misunderstanding or lack of understanding and those that are based on correct interpretations of questions and recording of answers. The interview method allows questions to be rephrased and explained so that the respondent understands the questions to which she is replying. It minimizes mechanical mistakes in recording. The interviewer can be trained to correctly record the mother's responses with a minimum of interpretation. The rapport developed between interviewer and respondent carries the mother through the interview and minimizes the problem of incomplete information.

2. Methodological: A mother, in conveying information about her life situation will inevitably project a picture of herself. This kind of information is valuable in trying to develop an understanding of the problems with which this study is concerned, and the interview method provides a way of seeing the mother and her characteristic personality style for analysis of her self-portrayal. Further, it allows an assessment of the interviewer's perception of the mother's openess, frankness, etc. which may be used to modify the interpretation of the information in the interview. The introduction of systematic or unsystematic biases by the interviewers is minimized by the tape-recording of the interviews, and by their ratings and monitoring by an additional person.

3. Ethical: An interviewer who enters into a relationship with a mother in a time of crisis frequently is able to ease the mother's mind and help her to cope with the crisis. In this way, the interviewer is able

to reciprocate the respondent's willingness to provide information with a kind of compassionate hearing. In addition, one is able to gain a much better sense of ways to offer families additional help beyond the interview.

4. Stylistic: Questions on the interview are formulated in an informal and colloquial way. Attempts were made to phrase questions in everyday language; the items on the interview were "captured rather than constructed". Interviewers were required to follow the interview schedule but were allowed some flexibility in order to elicit the most accurate information from the mothers.

B. Logistics of Interviewing:

1. Identifying and Contacting Cases and Controls:

In the middle of November, 1972, the formal collection of data for the epidemiologic study began with the start of interviews in the Outpatient Department (Emergency Room).

On December 11, 1972, data collection on the Inpatient Medical Service began; within the month it was possible to begin interviewing on the General Surgery, Orthopedic and Neurologic clinical areas. Formal permission to interview families on the Neurosurgery and Cardiology Services was obtained by the end of January, 1973.

The Emergency Room was covered seven days a week in systematically generated four hour shifts from 5:00 A.M. to 1:00 A.M. whose proportions represented emergency room patient flow as shown in the Emergency Room Study. 45% of the shifts were between 8:00 A.M. and 4:00 P.M., 45% between 4:00 P.M. and 12:00 Midnight, and 10% between midnight and 8:00 A.M. Interviewers were randomly assigned to time slots which were distributed throughout the week. In the emergency room, cases and controls were ascertained from the log sheets. Interviewers scanned the log sheet starting with the most recent admission and selected the interview in the following order of priority: (1) case, (2) needed control and (3) other control.

The inpatient population was ascertained through a daily screening of the hospital admitting records. All children under four years of age who had diagnoses of child abuse, neglect, failure to thrive, lead poisoning, pica, accidents and ingestions were eligible for selection into the study as cases. All other children, except those with diagnoses of chronic disease, terminal illnesses and return visits for prior accidents were eligible for selection as controls and were matched with cases on the age of the child, his socio-economic status and ethnic group. Permission to interview the mother was obtained from the attending physician; the family was contacted by the Family Development Study Nurse; and an interview was scheduled.

The interview itself took from thirty to sixty minutes to complete.

2. Coding, Rating and Validating the Interview:

The procedures for conducting, coding, rating and validating the interview were identical for inpatients and outpatients, cases and controls.

All interviews were tape-recorded. After the interview, the interviewer coded the interview; a copy of the code is attached as Appendix D. She then described the mother's character by Q-Sort, as described in greater detail below, and rated subjectively both the quality of the mother-child interaction (including negative symbolic referents aroused by child and conflicting or negative responses elicited by the child) and the extent of risk to the child (including periodicity of the presenting complaint, protectiveness of respondent and risk of the environment milieu to the child).

A second interviewer, for validation purposes, listened to the tape in its entirety and described the respondent's personality with the Q-Sort. Inter-rater reliability was assured by periodic review of the Q-sort data.

Extensive efforts were made to develop and maintain a high level of interview quality and consistency through training, careful monitoring and continuous supervision of the interviewers.

The taped interviews themselves were periodically monitored to assure that complete and appropriate information was being obtained. The research supervisor re-read and checked each interview against the corresponding coding sheet.

3. The Q-Sort:

The Q Sort method (J.Block, The Q-Sort Method in Personality Assessment and Psychiatric Research, Springfield, Illinois, 1961), was chosen as the tool to assess the personality of the mother because it permits a comprehensive description of an individual's personality in a form suitable for quantitative comparison and analysis. Its orientation is comtemporaneous; the subject is described as he appears and is understood by the observer at the time of the observation.

The description of the individual is accomplished through a set of items previously determined. These items constitute the entire vocabulary the observer is permitted to employ. The Q-sort method is an ipsative procedure. The personality variables in the defined set are ordered relative to each other with a specific subject, in this case the mother, as the frame of reference. Items are ranked in order of the descriptiveness of the mother; those most salient in characterizing a mother are given high scores while those least salient are scaled low. For each item the number of the category in which it is placed is recorded as that item's value in the personality description. These ipsative data are reported in a normative frame of reference providing person-centered data in numerical form which is substantial and significant. The standardized language used in the Q-sort method permits the comparison of diverse viewpoints and facilitates the comparison of items against a Q-Standard which is separately and independently evolved.

The original Q-sort, attached as Appendix E, was revised in March, 1973, at the request of the interviewers who felt they were unable to appropriately apply some of the descriptors to the mothers after only one interview session. Of the original 42 adjectives, thirteen were replaced.

The interviewers themselves arrived at a consensus definition of each descriptor in the revised Q-sort. These are included with the descriptors in Appendix F.

X. Interviewers:

A. Identification:

Most of the study data were collected by three female interviewers who were employed from October, 1972, through May, 1974. Two were white, the other black. One was a former Peace Corps worker, another a social worker and the third a graduate student in child psychology.

A white bi-lingual interviewer (fluent in Spanish) was employed between January and July, 1973. A bilingual Chicano interviewer, a graduate social work student, was employed for six weeks during the spring of 1974. These brief employment periods partly explain the small number of Spanish interviews; additionally, the case and control pool of Spanish-speaking, linguistically isolated families appeared to be small.

The research supervisors (one employed summer, 1972, to summer, 1973, and the other Spring, 1973, to Summer, 1974) also conducted a small number of interviews. The first had been a psychology major as an undergraduate; the second was a candidate for a psychology graduate degree.

B. Training:

The study interviewers were trained as a group utilizing the following procedures and exercises:

1. Explanation and elaboration of study hypotheses.

2. Detailed discussion of each item on the interview schedule and a rationale for its inclusion.
3. Explanation and rationale for Q-sort methodology.
4. Consensus definitions of Q-sort items.
5. Role playing and role taking exercises.
6. Observation of an interview through a one-way mirror.
7. Supervised interviews of mothers on both inpatient and outpatient services.

C. Supervision:

Supervision included bi-weekly meetings between the interviewers and the research supervisor to discuss problems concerning interviewing, coding, and rating schedules. In addition, interview techniques were refined through a continuation of the training techniques identified above. Logistical questions around the scheduling of interviewers and interviews were also discussed.

On alternate weeks a hospital staff psychiatrist met with the interviewers and research supervisor(s). These sessions included: advice on interviewing techniques, with particular focus on interviewing in a crisis situation, consultation on problems in communicating with mothers having serious problems in caring for their children, ways of making mothers feel comfortable in sharing their feelings about their child and about other intimate aspects of their lives, and techniques of coping with mother and children who were distraught and anxious.

XI. Issues of Confidentiality and Ethics:

To protect the confidentiality of the information in the interviews, the tape was erased directly after the second rating; interview forms were kept in a locked file after they had been coded; and the information obtained in the interview was made available to the hospital professional staff only if requested, and even then was carefully and scrupulously summarized.

No raw interview data were shared by the study staff. For each interview, parents were asked to sign a consent form which simply and adequately described this procedure. (See last two pages of Appendix C, the Phase I Interview). The methodologic implications for the study of the attention to research and professional ethics in its first Phase are summarized in Appendix G.

XII. Termination of Outpatient Interviewing:

Outpatient interviewing was discontinued on July 15, 1973. This decision was made on the basis of the data analysis conducted in late spring, 1973. Findings indicated much more significant differences between inpatient controls and inpatient cases than between outpatient controls and outpatient cases. It did not appear as if the case-control differences in the Emergency Room sample would be of such magnitude to justify the time and expense of further interviewing. Details are found in the next section.

XIII. Preliminary Analysis of the Phase I Data

1. The Sample: Size and Selective Factors

The study sample consisted of 560 interviews (Table 1) with mothers who brought a child under four years of age to the Children's Hospital Medical Center. Three hundred and three of these were obtained from the inpatient population and 257 from the emergency room of the outpatient service. Cases potentially involving social illness according to the basic study hypothesis (accidents, ingestions, lead poisoning, failure to thrive and child abuse and neglect) were selected for study. These are referred to as "cases". The categories of abuse and neglect have been combined and are referred to as "abuse" because the distinction between the two is not clearly and consistently made in the hospital practice. Also the ten inpatient cases of lead poisoning have been included in the "inpatient ingestions".

In the outpatient setting the only basis for identifying "cases" was the chief complaint, which meant that only "accidents" and "ingestions" could be recognized and sampled. Although these categories also exist in the inpatient sample they undoubtedly represent different types of cases in the two settings. For example three quarters of the inpatient accidents involved a burn, fracture or head injury (Table 2) while less than one quarter of the outpatient accidents involved these types of injury.

Among the inpatients, half of the abuse cases were hospitalized on the medical service while the remainder were scattered over six other services (Table 3). Accident cases tended naturally to be concentrated in the surgical services while the remaining groups came predominantly from the medical service.

Since the intention was to interview all inpatient "cases" hospitalized during the study the small numbers in some of the categories are disappointing

and raise doubts about the generalizability of the findings. Of particular concern is the abuse category,where study interviews were obtained from only 16 of 38 eligible mothers. The main reason for failure to obtain these interviews was refusal of the hospital staff to permit the research interview. The clinical people involved with these cases felt that in general the uninterviewed cases were more complicated and that this was the reason for reluctance to authorize the interview. In order to test this interpretation a special study was carried out in which the contents of the Family Development Study interview was reconstructed for all 38 abuse cases on the basis of the medical record and interviews with hospital staff members involved in the cases. These reconstructed interviews are far from complete and show some differences when compared with the actual interviews of the 16 cases in the study. Nevertheless, they support the notion that the abuse cases in the study are generally the less "extreme" cases and if it were possible to include the uninterviewed cases the major findings would be strengthened rather than weakened. (Fig. 1)

Controls were selected from other acute illnesses for which this was (as with the cases) the first visit or admission for the current illness. An attempt was made to match the case and control groups on age, race and whether the payment of the medical bills included public funds (Table 4). These were chosen as the only pertinent variables that were uniformly available at the time of sample selection. This matching implies that we do not intend to evaluate any direct contribution of the child's age or the family's race or socio-economic status to the social illnesses under investigation. We shall look for interaction effects of these matching variables. Thus we shall analyze white and non-white segments of the sample separately to see whether they appear to show similar or different causal patterns. It should also be noted that the matching process means that the

controls are not simply representative of the general patient population of the hospital.

The inpatient and outpatient case groups as a whole show a generally good correspondence with the control groups on the matching variables (Table 4). However, specific case categories show differences (Table 5). The inpatient abuse and failure to thrive categories are relatively heavily weighed with young infants and white families. It may also be noted that the abuse cases tend to have low socio-economic status as indicated by the relatively high proportion with public assisted medical payment.

Sex of the child was not used as a matching variable and it is of interest to note that the abuse and failure to thrive cases involved relatively more boys than were found in the inpatient controls. The highest proportion of males was found in the outpatient ingestions and the lowest in the inpatient ingestions. (Table 6)

In addition to deliberate selection criteria imposed by the study proticol there exists a selection process, not clearly or completely known, that determines who comes to the Children's Hospital Medical Center for service. This process undoubtedly operates somewhat differently for the various categories of case and for the controls. For example, it can be seen from the study data that an unusually high proportion of the failure to thrive cases came to the hospital on referral by a private physician or another hospital (Table 7). Also, and this is a matter of substantive interest, a relatively high proportion of the cases had previous treatment at this hospital for episodes that would also have been classified as cases, though not necessarily the same category of case as the current study episode (Table 8).

The study groups also show differences in place of residence (Table 9 and Figure 2). Outpatients are drawn from Boston to a greater extent than inpatients. The outpatient controls had the highest and inpatient controls the lowest proportion coming from the Roxbury-Dorchester section of Boston,

which is predominantly a low income and non-white area.

2. The Families: Marital Status, Occupation and Education

Seventy-five percent of inpatient control mothers and 45% of outpatient controls reported themselves as currently married (Table 10). The remainder were divided roughly evenly between single and separated, divorced or widowed. Failure to thrive mothers had nearly the same marital status distribution as inpatient controls. Inpatient and outpatient accident mothers had about the same proportion as the corresponding controls but had higher proportions of single mothers. Inpatient ingestions and abuse had lower proportions married, about 50%, with some increase in the proportion single and more increase in the proportion separated, divorced or widowed. Outpatient ingestion mothers, on the other hand, had a high proportion married, 70%, and the lowest proportion single, 8%.

In summary, the most notable differences between the patient groups in terms of marital status are: (1) lower proportions married in outpatient as compared to inpatient families, (2) lower proportions married and among the unmarried, higher proportions separated divorced or widowed for inpatient ingestion and abuse, families as compared with inpatient controls, and (3) among outpatient ingestions a high proportion married along with a high proportion separated, divorced or widowed among the unmarried.

Marital problems appeared more commonly in outpatient as compared to inpatient families. They were somewhat more common among inpatient abuse and outpatient ingestion families.

Families without a father figure in the household were not common - 10% in outpatient controls and 5% in inpatient controls. All abuse and outpatient ingestion families had a father figure present in the household. Among the various inpatient case groups the father figure tended not to be the father of the study child although among outpatient cases, particularly

Current unemployment of fathers was somewhat higher among outpatients as compared to inpatients (Table 11). Inpatient ingestions and to some extent failure to thrive families had higher proportion of father's unemployed. Otherwise, the case groups did not show elevated unemployment and in fact the abuse families reported relatively fewer fathers unemployed. The proportion of working mothers was also lower among abuse families.

Occupational levels of fathers and mothers have been summarized in three broad categories. Relatively high proportions of unskilled or never worked are found in outpatients as compared to inpatients and among inpatient abuse and ingestions. The mothers of failure to thrive children also have a high proportion in the lowest occupational category although the fathers of these children are not notably low in the occupational scale. Outpatient ingestions are again peculiar in having mothers with relatively high occupational level.

In terms of education (Table 12) outpatient fathers and mothers tend to have less education than inpatient parents. The accident groups are similar to or have slightly more education than controls. Inpatient abuse mothers and fathers have low educational attainment of all patient groups. In education, as was noted in the occupational data, failure to thrive mothers have lower attainment than the fathers. Again, the outpatient ingestion families show slightly higher rather than lower education.

Educational level of the mothers differs according to race (Table 13). In the total sample 83% of non-white and 65% of white mothers had a high school education or less. The small number of non-whites with more than high school education makes detailed analysis of this group impractical. Consequently later analyses will show results separately for three parts

of the study sample: (1) all non-whites, (2) whites with a high school education or less, and (3) whites with more than a high school education.

3. STRESS-STRENGTH SCORES FOR CASES AND CONTROLS

The present analysis of the study has been built around a set of scores intended to measure stresses impinging on the family and strengths within and around the family which may help to mitigate the direct and indirect effects of these stresses on the child .

Any stress-strength conceptualization of problems of this type is incomplete without defining as precisely as possible the distinctions between - and relationship of - stress antecedents or stressors, and stress consequences. For analytic purposes, the introduction of a third, but not independent, notion - sometimes referred to as strain - is appropriate in this regard. In this conceptualization "stress" is thought of as a force applied to an individual unit, a structure or a system; "strength" is the capacity of the unit to resist the effects of the stress; while "strain" is the resultant deformation or injury to the unit. Thus in a general way:

strain = stress - strength

In the most elementary of engineering applications a force (stress) is applied to an object such as a steel beam. Then the amount that it is deformed or bent (strain) is measured and the strength of the beam is inferred from the relative magnitude of stress and strain. In our vastly complex human application we are able to measure none of the three components completely and there are serious problems both in attempting to measure them separately and in assessing their cause-effect assocations. Child abuse may be thought of as a strain resulting from stress on the family in excess of its strength to cope with the stress. We are attempting to develop measures of strength in terms of characteristics which are believed to contribute to the capacity of the family to resist stress.

Our measures of stress are based on factors which have been implicated in the research and clinical literature as contributors to the occurrence of high risk situations for the child.

Some of the conceptual difficulties are indicated by the fact that we have included the occurrence of a broken family during the childhood of the mother as a part of "historical stress". It is true that under some circumstances a break in the family of origin of the mother may indicate a stress on the current family through the grandparents of the study child. However, it may more commonly be the case that the original broken family has its impact on the current situation because of reduced strength of the mother to deal with current family crises. Thus a single fact may be either an indicator of stress or of lack of strength.

Nor is it always possible, at the present stage, to distinguish clearly between stress and strain. For example, marital problems have been included as indicators of stress in the current family situation. It is possible that a marital problem is a strain response to some more fundamental stress which should be thought of as the basic stress which is producing risk for the child.

Despite these conceptual problems and limitations we feel that the stress-strength orientation has been useful in helping to structure an approach to our data and should be further refined in the future.

The present stress and strength scores are most commonly simple counts of a set of specified characteristics that were present in the family. The detailed definitions of the scores are given in the appendix, and findings with regard to specific items in the scores are presented in Section 5 of this report. During the course of the study two analyses were carried out prior to the one reported here. During the summer of 1973 a preliminary study was made in terms of a number of "problem" scores. These were

constructed a priori to indicate the number of problems a family was faced with in a variety of areas. This analysis produced two conclusions: (1) the general hypothesis of the study seemed to be consistent with the data to that date, (2) the outpatient sample was so distinctly different from the inpatient sample and the number of outpatient interviews was sufficiently large to justify concentrating the remaining interviewing resources on inpatients and outpatient ingestions only.

A second analysis was made covering data collected from the beginning of the study to February 15, 1974. In this analysis all items in the interview were reviewed in terms of the hypotheses of the study and the reasoning behind the inclusion of each item. On this basis a series of totally a priori stress scores were constructed. The relatively clear differentiation between cases and controls that emerged from that analysis (Fig. 3, 4, 5, and 6) was taken as an indication that the data clearly supported the general stress hypothesis. On this basis, for the present report, we revised our stress scores omitting some items that contributed little to the differentiation between cases and controls, giving some items a little more weight than others and attempting to clarify our concepts of stress and strength. We are in the process of additional revision of these scores including consideration of correlations between items and scores and of interactive effects in discriminating between cases and controls.

"Historical stress" (Table 14) refers to the mother's family during her childhood and youth. Reports of a broken home, household mobility and abuse or neglect during the mother's childhood were included in the

household disruption part of this score. Illness of the mother during her childhood or youth or illness in her family at that time contributed to the "historical illness" score.

In terms of the mean scores there was no significant difference between cases and controls among the outpatients. In fact the direction of the differences among outpatients was opposite to that hypothesized except for the presence of illness in the history of ingestion mothers.

Among inpatient mothers on the other hand all differences between cases and controls were in the direction of the hypothesis. These differences were clearly statistically significant on the historical household disruption score for inpatient accidents, failure to thrive and abuse, but the differences on the historical illness score were neither striking nor significant.

Contemporaneous stress scores (Table 15) showed case-control differences that were almost entirely in the direction of the hypothesis. The differences were strongest for the abuse cases although the inpatient accidents also had high means on all three sub-scores. It is of particular interest that inpatient accidents were high on contemporaneous household disruption (mobility, death in the family, siblings living away from home, people moving out of the household, and marital problems) since they had not in general had a maternal history of household disruption.

The concept of contemporaneous child centered stress is probably only weakly measured by our present scale in spite of the fact that differences are significant for inpatient and outpatient accidents as well as for abuse.

The inpatient ingestion group is notable for joining the abuse and inpatient accidents in having a high score on miscellaneous contemporaneous problems. This score includes problems concerning family health, alcohol,

drugs, legal matters, financial matters and housing, and is of particular interest since these are areas where advocacy intervention can frequently have an immediate impact.

The contemporaneous strength scores (Table 16) were notably low for the failure to thrive and abuse groups. In fact on these scales the failure to thrive mothers are most extreme. The "maternal and social environment" subscale includes mothers health and education along with indications of the availability of support from relatives and neighbors.

The "ideal mother score" was based upon the Q-sort carried out by the interviewers after coding the interview. (See appended list of descriptors). In order to scale this material four of the interviewers recorded Q-sorts describing their idea of "an abusing mother", "a failure to thrive mother" and an "ideal" mother. These conceptual sorts were averaged over the four interviewers. The results (Fig. 7 and 8) showed that the interviewers made little consistant distinction between the ideas of abusing and failure to thrive mothers, and tended to define these types as a mirror image of the ideal mother. Consequently the seven groups of six descriptors each as indicated by the dashed lines in Fig. 8 were taken as a concensus Q-sort description of an ideal mother in contrast to abuse or failure to thrive mothers. A correlative coefficient was then calculated between the Q-sort for each study mother and the ideal mother Q-sort. This correlation coefficient, with a linear transformation to eliminate negative values, became the Ideal Mother Score for each individual.

By this criterion, the abuse and failure to thrive mothers scored distinctly lower than others as ideal mothers. For all case groups the difference from controls was in the direction of the hypothesis.

The mother-child interaction scores (Table 17) were limited by the restricted opportunity, in this interview setting, to observe the interaction very extensively. The first sub-scale "negative response to child" is based on two items reported by the interviewers (negative referents aroused by child and negative responses elicited by child) and did not show significant differences except among outpatient ingestions.

The second sub-scale in this area was based on two summary ratings made by the interviewer after completion of the interview. These were the ratings on scales of 1 to 9 and 1 to 11 of "Risk of the environmental milieu to the child" and "Protectiveness of the mother". The score is an average of these ratings after collapsing extreme, little-used categories. All case groups showed significant differences from controls on this score. Although these were not blind ratings, since the interviewers generally knew what type of case they were interviewing, we believe that this score primarily represents valid observation.

The miscellaneous stress scores (Table 18) are the least theoretically based, the least a priori, and therefore probably the least validly generalized of the entire set of scores. The first two of these are composed of items, not included in the previous scores, that, in the preliminary analyses, appeared to help discriminate the failure to thrive and the ingestion groups respectively.

The fact that the failure to thrive score includes the mother's perception that her child has a serious health problem and is difficult to feed is probably in some sense valid though, for our purposes, trivial. But the appearance of sleeping, discipline and "other" health problems in the ingestion score is at least intriguing.

The final residual item score was an attempt to make sure that we did not overlook a possible additive effect of some remaining items that had not been included in the other concepts. Reviewing all of these "miscellaneous" scores shows that one or more pregnancy or birth control items appears in each. This suggests that we might consider constructing a scale based on the attitudes of the mother toward her pregnancy with the index child in spite of the weak performance of the individual questions.

Near the end of the interview, the mother was asked three open-ended questions designed to elicit some aspects of her self perception. The wording was:

> "Now I would like to ask a couple of free-form questions about the way you view yourself: If you could change yourself, what would you change?"
>
> "What things about yourself do you like most?"
>
> "Could you tell me the three things you think would best describe the kind of person you are?"

Responses were recorded briefly by noting the various characteristics mentioned. A code was generated from a set of inpatient responses including both cases and controls. Code construction and coding was carried out without knowledge of the case-control category of the respondant.

The code included: (1) a characterization of the overall response as negative, positive or mixed with regard to the self, (2) a classification of the orientation of the response as sociological (role, status or life history of the respondent), psychological (personality traits or specific behavior characteristics), physical appearance, or combinations of these three, (3) a rating of the inclusion of any combination of six "personalities" -- the capable-confident self, the nervous-emotional self, the happy-good humored self, the aggressive-hostile self, the helpful-supportive self,

and the passive-retiring self. Finally a score of self-perception strength was constructed which in essence gave weight to having a positive view of the psychological self with emphasis on being capable, emotional, good-humored and supportive. This score was constructed on a mixture of a priori and a posteriori considerations. Most notable among the latter was the observation that for mothers of abused children the sociological perception of the self seemed to be most salient - a global concern about their role and life history seemed to be more important than details of personality.

This scale of self perception strength did not differentiate between inpatient groups and controls as strongly as some of the other scales but all differences were in the hypothesized direction, with ingestions, failure to thrive, and abuse cases showing statistically significant differences.(Table 9)

These different scores might be combined in a wide variety of ways. We have first chosen for examination a combination of the historical and contemporaneous household disruption scores. This choice was dictated by a number of considerations: (1) both scores appear to discriminate between cases and controls, (2) the combination of low historical stress appears to be characteristic of accidents as opposed to other case categories, and (3) the items in these scores are comparatively objective and might be obtained in the course of a relatively short interview. The contemporaneous household disruption score was given twice the weight of the historical in the combination, thus approximately standardizing the scores according to the standard deviations observed in the inpatient controls.

This combination of historical and contemporaneous household disruption (Table 19) clearly distinguishes all inpatient case groups from controls. In terms of means this score operates as well as or slightly better than the interviewer's ratings of Risk and Lack of Protection for the Child

(Table 17). However, the statistical discrimination power of the Risk-Protection score is superior because of the smaller variabilities within patient groups.

One more combined score was created by subtracting the mothers Self Perception Strength Score from the combined Stress Score for Historical and Contemporaneous Household Disruption (Table 19). The constant number 10 was added to this score to give it a minimum possible value of zero.

This combination introduces the notion of strength as a mechanism for reducing the impact of stress. Examination of the + values in Table 19 indicates that this combination does a somewhat but not strikingly more effective job of discriminating between cases and controls as compared with the previous stress score combination.

4. STRESS—STRENGTH SCORES BY RACE—EDUCATION

In order to explore the possibility that processes related to social illness operate differently in different social segments of the population the study sample was divided in three broad groups on the basis of race and education of the mother. These were: (1) non-white, (2) white with high school education or less, and (3) white with more than high school education. It will be recalled from sections I andII that the non-white group is predominantly black but includes a few Spanish-speaking families. Also the non-white group is educationally heterogeneous since it includes a small proportion with more than high school education and at the same time is relatively heavily weighted at the low end of the less than high school category.

In order to have sufficient numbers for this analysis the three least common and generally most extreme case groups were combined. Thus in this section child abuse, failure to thrive and inpatient ingestions are combined into a single case group which is compared with inpatient accidents and inpatient controls for each of the three race-education groups.

The data contain an unavoidable confounding between the race-education groups and the types of cases that have been combined in the extreme category. Fifty-nine percent of the non-white cases in the extreme category were ingestions (19/32). The remaining non-white cases were evenly divided between failure to thrive and abuse (7 and 6 respectively). On the other hand 64% (30/47) of whites with high school or less education were cases of failure to thrive with the remainder evenly divided between ingestions and abuse (8 and 9). Finally the thirteen cases involving white mothers with more than high school education are about equally weighted with ingestions and failure to thrive (7 and 5) while including only one case classified as abuse. Thus, it must be remembered that, in this section, a characteristic of the non-white extreme

case group may be a characteristic of families in which ingestions occur; findings in the lower education white group of extreme cases may be characterizing families in which children fail to thrive; and the upper education white group is a mixture of ingestions and FTT with a small proportion labeled abuse.

The results of this analysis are presented in Tables 20 to 29 and Figures 9-13. There is a general tendency for stress scores to increase and strength scores to decrease from controls to accidents to abuse plus failure to thrive plus ingestions. There is also a tendency for stress scores to decrease and strength scores to increase from non-white to white with high school or less education to white with high school education. Tables 26 and 27 and Figure 12 illustrate this pattern for the stress score "Risk and Lack of Protection for the Child" and the strength score "Self Perception Strength". However, this pattern was by no means universal and there are a number of exceptions that are worth noting.

One of the most important of these is found within the white high-education group where the accident cases tended to have higher stress scores than the group of extreme cases-abuse, failure to thrive, and ingestion. This can be seen in the combination summary scores (Figure 13, Tables 28,29) and in all of the contemporaneous stress scores (Figures 9, 10 and Tables 21, 22, 23).

The lower-education white group tends to be most consistent in presenting a continuous increase of stress from controls through accidents to the extreme case group on the different scores. Since this population segment constitutes 64% of the total inpatient sample it has a strong effect on the appearance of the overall results.

Non-white mothers as a whole had relatively low scores on child centered stress and distinctly high scores on Miscellaneous contemporaneous Stress. (Figure 10 and Tables 22 and 23). Among the non-whites, neither of these stress scores contributed statistically significant evidence to support the hypotheses which pertain to these scores.

Data from all three of the race-education groups supported the idea that contemporaneous household disruption is relatively more closely associated with the occurrence of accidents while historical household disruption tends to be linked with the more extreme types of cases - abuse, failure to thrive, and ingestions. (Fig. 9 and Tables 20,21)

The findings on the combined score, including historical and contemporaneous household disruption along with self perception strength, are presented in cumulative distribution form in Tables 30 and 31, and Figures 14 to 17. If we think of this as a risk score identifying family situations where some of the potential for injury to the child exists, it is of interest to examine the frequency of high risk scores in the various patient groups.

Figure 14 and Table 30 show that, among the total inpatient sample, the cumulative curves for controls and cases of abuse were markedly different. In the range of risk scores from 7 through 18 the two cumulatives are separated by more than 40 percentage points. The maximum differentiation occurs at score 12 with 69% of abuse cases but only 15% of controls having risk scores above that value.

The inpatient accident, ingestion and failure to thrive cumulative curves are very similar and are closer to the controls than to the abuse cases. The slightly higher mean scores previously noted for ingestions and failure to thrive as compared with accidents (Table 19) appear to have arisen largely from differences in these distributions below a score of 14, below which 80% of all three groups is included. Thus the grouping of ingestions and failure to thrive can be seen to be somewhat arbitrary; rather, it appears that these phenomena may be distinct and different in regard to the attributes of risk measured in these scores.

Further peculiarities of the accident cases emerge when the findings in the different race-education groups are examined. Among the non-whites, for example (Table 31 and Fig.15), no control family had a risk score of 20 or

higher while roughly 15% of both the accident and the abuse + FTT + ingestion group had scores in this high region. The fact that the accident group included so many cases with apparent high risk suggests that there is a subset of the accident group that may share a common etiology with the more extreme case group.

This phenomenon appears even more strikingly among the whites with more than high school education (Table 31 and Fig. 17) where at any score from 8 on the accident group has a larger proportion of "high risk" families than either the controls or the abuse + FTT + ingestion cases. Among whites with lower education on the other hand the cumulative distribution for accidents is similar to that for controls while the abuse + FTT + ingestion cases clearly have higher proportions in the high risk region.

This intriguing high risk prevalence in the white, relatively well-educated accident population may be interpreted to suggest a misclassification favoring accidental injury rather than child abuse for these families or , alternatively, a different adaptation to high levels of stress from that of less well-educated white or non-white families, expressed in a diminished capacity to protect children from the hazards of their environments rather than an active, punitive parental response to stress.

5. INDIVIDUAL ITEMS IN THE STRESS-STRENGTH SCORES

Tables 32 through 42 present data on individual items that were included in the various stress-strength scores. The number of interviews in which a given item was present is reported separately for inpatient controls, inpatient accidents and the combined case group made up of child abuse, failure to thrive and ingestions. Odds ratios have been computed as an index of the power of the item to discriminate between cases and controls. The odds ratio (or cross product ratio) is defined in the footnote to the tables.

In Table 32 the first odds ratio (1.60) is calculated from the fourfold table:

	Broken Family < 4 Years of Age		
	No	Yes	Total
Control	116	22	138
Accidents	56	17	73
Total	172	39	211

$$\text{Odds Ratio} = \frac{(17) \times (116)}{(56) \times (22)} = 1.60$$

The odds ratio would have a value of one if the factor (e.g. Broken Family) were not associated with the condition (accident). When the "case" condition has a relatively low incidence the odds ratio is an estimate of the relative size of the incidence with the factor present or absent. Thus the 1.60 above implies that accidents occur 1.6 times more commonly in families where the mother experienced a broken home during early childhood as compared with families where the mother had not had that experience.

The odds ratio at 3.23 for the case group, abuse + FTT + ingestion, indicates that this category of case is more than three times as common when there is a history of broken home in the mother's early childhood. One of the reasons that the odds ratio is a particularly appropriate measure of association for case-control studies is the fact that it does not depend upon the arbitrarily determined number of cases and controls.

Examination of the tables suggests that the items making particularly strong contributions to the discrimination between cases as a whole and controls are:

Broken Family and Mobility in Mother's Childhood (Table 32)

Two or More Moves in Past Year (Table 34)

Negative Response Elicited by Child (Table 39)

Child at Risk of Impairment (Table 39)

Child Inadequately Protected (Table 39)

The last three of these, it should be noted, are dichotimizations of a rating or judgement made by the interviewer on the basis of multiple pieces of evidence and in that sense are not single items.

Other items that tend to show high odds ratios but which are not as strong as the first group or were reported so infrequently that they have little practical discriminatory power are:

Sibling < 4 living away from home (Table 34)

Person moved away in past three months (Table 34)

Child hurts himself a lot (Table 35)

Alcohol or drug problem (Table 36)

Phone available (Table 38)

Negative symbolic referents (Table 39)

Problem with feeding (Table 40)

Problem with discipline (Table 41)

The item "marital problems" was retained in the contemporaneous household disruption score (Table 34) on theoretical grounds even though it appears to have no capacity to discriminate as a single item. Preliminary investigation of the power of combinations of items to make case-control discriminations suggest that the "marital problems" items interacts with such items as "two or more moves during the past year" and "person moved away in the past three months" and thus contributes to a more powerful discrimination. Investigations of this type of question are being carried out as a means for further refinement of the scores.

6. ADVOCACY EXPERIENCE WITH THE STUDY SAMPLE

At the end of the interview, the interviewer, depending upon the problems that had been mentioned by the mother, was able to make available the advocacy services of the Family Development Study to those who felt they would like to use them. One hundred and twenty-eight mothers, 23% of those interviewed, requested advocacy services. This proportion was larger among outpatient controls (Table 43). Outpatient controls requested advocacy more often than outpatient cases. Among inpatient, mothers in the abuse and ingestion groups asked for the services of an advocate nearly three times as frequently as controls, while the failure to thrive and accident groups had about the same rate of requests as the controls.

Among those requesting advocacy, housing and social (within family and between family and community) problems were the most common (Table 43). This was particularly true for inpatient ingestions and child abuse cases and to a lesser extent for inpatient accidents and outpatient ingestions.

A large proportion of the problems could be handled immediately or by only short term advocacy (Table 43). Inpatient accidents, failure to thrive, abuse and outpatient controls had the highest proportion of families whose requests could be handled on this short term basis. The outpatient and inpatient ingestion groups had the highest proportions requiring more prolonged assistance.

The complexity of the problems is indicated in part by the proportion of cases requiring referral outside of the Family Development Study unit (Table 43). Such referral was most common among failure to thrive, child abuse and inpatient and outpatient accidents. Ingestions, both inpatient and outpatient, were characterized by relatively high need for long term advocacy but low need for referral. To some extent this reflects the presence of complex housing problems in the ingestion group.

When the advocacy experience was examined according to the race-education groups, it was found that among both cases and controls in both the inpatient and outpatient samples, non-whites requested advocacy more commonly than whites and whites with lower education requested advocacy more commonly than those with higher education (Table 44).

The percentage of housing and social problems was higher among non-whites as compared to whites. Both the proportion needing only short term advocacy and the proportion requiring referral tended to be higher among whites than non-whites.

In general the advocacy requests seemed to correspond with the picture of current problems obtained from the interview survey. In looking ahead to possible modes of intervention, it is encouraging to note comparatively high proportions of the case groups requesting advocacy and high proportions amenable to immediate or short term assistance.

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TABLE 1

SIZE OF THE STUDY SAMPLE ACCORDING TO PATIENT GROUP

PATIENT GROUP	NUMBER OF INTERVIEWS
Total Sample	560
Total Inpatient	303
Inpatient Controls	138
Total Inpatient Cases	165
Inpatient Accidents	73
Inpatient Ingestions	34
Inpatient Failure to Thrive	42
Inpatient Abuse	16
Total Outpatient	257
Outpatient Controls	119
Total Outpatient Cases	138
Outpatient Accidents	112
Outpatient Ingestions	26

TABLE 2

ACCIDENTS ACCORDING TO TYPE OF INJURY

TYPE OF INJURY	ACCIDENTS			
	INPATIENT (Admission Diagnoses)		OUTPATIENT (Chief Complaint)	
	No.	%	No.	%
Burn	21	28.8	4	3.6
Fracture	17	23.3	3	2.7
Head Injury	17	23.3	17	15.2
Laceration	0	0.0	29	25.9
Injury to Extremity	3	4.1	13	11.6
Fall	3	4.1	19	17.0
Other	12	16.4	27	24.1
Total	73	100.0	112	100.1

TABLE 3

INPATIENTS ACCORDING TO HOSPITAL SERVICE

HOSPITAL SERVICE	INPATIENT GROUP				
	Cont.	Acc.	Ing.	FTT	Abuse
Medical	122	12	24	38	8
Neurosurgical	4	27	2		2
Surgical		23	6		2
Orthopedic	5	9			1
Cardiovascular	2	1	2	1	1
ENT	4	1		2	1
Newborn Nursery	1			1	1
Total	138	73	34	42	16

FIG. 1

COMPONENTS OF HISTORICAL STRESS, COMPARISON OF INPATIENT CONTROLS, ABUSE CASES INTERVIEWED BY FDS, AND OTHER ABUSE CASES

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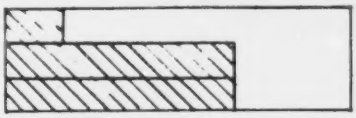
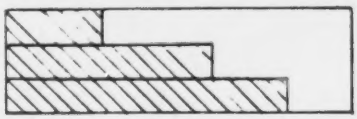
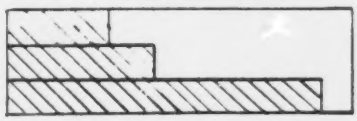
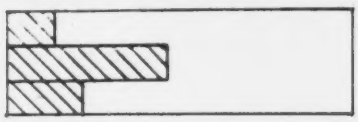
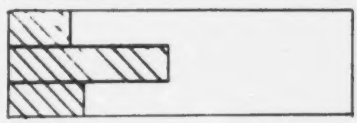
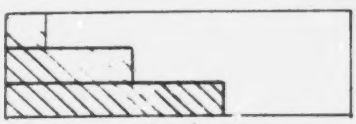
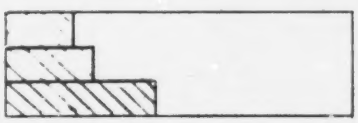
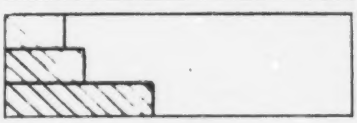
HISTORICAL STRESS		PATIENT GROUP	% YES (0 – 100)	% YES	NUMBER YES	NO	TOT	UNK
BROKEN FAMILY	< 4	INPT. CONT.		16.8	22	109	131	7
		ABUSE FDS		66.7	10	5	15	1
		OTH.		66.7	6	3	9	13
	4-16	INPT. CONT.		27.8	37	96	133	5
		ABUSE FDS		60.0	9	6	15	1
		OTH.		81.8	9	2	11	11
	17-C	INPT. CONT.		29.0	38	93	131	7
		ABUSE FDS		42.9	6	8	14	2
		OTH.		90.9	10	1	11	11
MOBILITY	< 4	INPT. CONT.		13.8	19	119	138	
		ABUSE FDS		40.0	6	9	15	1
		OTH.		22.2	2	7	9	13
	4-16	INPT. CONT.		13.8	19	119	138	
		ABUSE FDS		46.7	7	8	15	1
		OTH.		22.2	2	7	9	13
	17-C	INPT. CONT.		18.1	25	113	138	
		ABUSE FDS		46.7	7	8	15	1
		OTH.		22.2	2	7	9	13
VIOLENCE OR NEGLECT		INPT. CONT.		11.5	9	69	78	60
		ABUSE FDS		36.4	4	7	11	5
		OTH.		63.6	7	4	11	13
MOTHER'S ILLNESS	< 17	INPT. CONT.		13.2	18	118	136	2
		ABUSE FDS		31.2	5	11	16	
		OTH.		33.3	3	6	9	15
	17-C	INPT. CONT.		9.5	13	124	137	1
		ABUSE FDS		14.3	2	12	14	2
		OTH.		30.0	3	7	10	12
FAMILY ILLNESS	< 17	INPT. CONT.		19.2	14	59	73	65
		ABUSE FDS		25.0	2	6	8	8
		OTH.		42.9	3	4	7	15
	17-C	INPT. CONT.		16.7	12	60	72	66
		ABUSE FDS		22.2	2	7	9	7
		OTH.		42.9	3	4	7	15

TABLE 4

MATCHING VARIABLES ACCORDING TO MAJOR PATIENT GROUP

MATCHING VARIABLE	PATIENT GROUP			
	INPATIENT		OUTPATIENT	
	Control	Case	Control	Case
Age (mo.)				
0-9	56	64	32	18
10-18	30	25	26	28
19-30	26	42	31	34
31-48	26	34	30	58
Race				
Black	34	48	55	52
White	101	110	54	74
Other	3	7	10	12
Public Assisted Medical Payment				
Yes	43	63	65	79
No	95	102	54	59
Total	138	165	119	138

TABLE 5

MATCHING VARIABLES ACCORDING TO PATIENT GROUP

MATCHING VARIABLE	PATIENT GROUP					
	INPATIENT				OUTPATIENT	
	Acc.	Ing.	FTT	Abuse	Acc.	Ing.
Age (mo.)						
0-9	21	4	29	10	17	1
10-18	13	6	5	1	19	9
19-30	19	15	7	1	27	7
31-48	20	9	1	4	49	9
Race						
Black	20	16	7	5	46	6
White	50	15	35	10	56	18
Other	3	3		1	10	2
Public Assisted Medical Payment						
Yes	19	18	14	12	67	12
No	54	16	28	4	45	14
Total	73	34	42	16	112	26

TABLE 6

PERCENT MALE ACCORDING TO PATIENT GROUP

	INPATIENT					OUTPATIENT		
	Cont.	Acc.	Ing.	FTT	Abuse	Cont.	Acc.	Ing.
% Male	58.0	54.8	44.1	69.0	68.8	53.8	53.6	61.5

TABLE 7

ROUTE OF ADMISSION TO HOSPITAL ACCORDING TO INPATIENT GROUP

ROUTE OF ADMISSION	INPATIENT GROUP				
	Cont.	Acc.	Ing.	FTT	Abuse
Children's Hospital Emergency Room	81	55	20	14	11
Children's Hospital Other	8	4	4	3	1
Private M.D. or Other Hospital or Clinic	26	13	8	18	3
Unknown	23	1	2	7	1
Total	138	73	34	42	16

TABLE 8

PREVIOUS TREATMENT AT CHMC
ACCORDING TO MAJOR PATIENT GROUP

PREVIOUS TREATMENT AT CHMC	PATIENT GROUP			
	INPATIENT		OUTPATIENT	
	Control	Case	Control	Case
Total Children	138	165	119	138
Child Previously Treated at CHMC No.	56	64	85	94
%	40.6	38.8	71.4	68.1
No. of Children With Previous: (1) Inpt. Adm.	26	17	8	18
(2) Outpt. Visit	44	60	83	92
% of Line (1) With Previous Adm. for Acc., Ing., FTT or Abuse	7.7	35.3	12.5	33.3
% of Line (2) With Previous Visit for Acc., or Ing.	20.5	46.7	22.9	46.7

TABLE 9

PLACE OF RESIDENCE
ACCORDING TO MAJOR PATIENT GROUP

PLACE OF RESIDENCE	PATIENT GROUP			
	INPATIENT		OUTPATIENT	
	Control	Case	Control	Case
Roxbury and Dorchester	27	43	50	52
Other Boston	31	29	34	52
Inner Met. Area (within 10 miles)	42	33	23	28
Outer Met. Area (10 to 20 miles)	16	14	2	2
Other	22	46	10	4
Total	138	165	119	138

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FIG. 2. BOSTON METROPOLITAN AREA

TABLE 10

MARITAL STATUS ACCORDING TO PATIENT GROUP

MARITAL STATUS	PATIENT GROUP							
	INPATIENT					OUTPATIENT		
	Cont.	Acc.	Ing.	FTT	Abuse	Cont.	Acc.	Ing.
Marital Status,%								
Single	10.9	19.2	14.7	16.7	18.8	26.0	33.0	7.7
Married	75.4	72.6	52.9	71.4	50.0	45.4	45.5	69.2
Sep., Div.,or Wid	13.8	8.2	32.4	12.0	31.2	28.6	21.4	23.1
% with Marital Problem	19.1	19.4	13.8	18.9	33.3	28.7	23.2	40.0
Male in Household,%								
No Father Figure	5.1	2.7	8.8	9.5	0.0	10.1	10.7	0.0
Fa. Fig. not Father	4.4	11.0	11.8	9.5	25.0	21.0	20.5	7.7
Father	90.6	86.3	79.4	81.0	75.0	68.9	68.8	92.3

TABLE 11

OCCUPATION OF FATHER AND MOTHER
ACCORDING TO PATIENT GROUP

OCCUPATION	PATIENT GROUP							
	INPATIENT					OUTPATIENT		
	Cont.	Acc.	Ing.	FTT	Abuse	Cont.	Acc.	Ing.
% of Fathers* currently Unemployed	13.6	13.2	24.1	18.4	6.7	21.0	17.2	21.7
ther's Occupational Level, %								
Clerical, Technical or above	46.7	39.4	46.4	39.5	13.3	23.2	40.7	36.4
Skilled or semi-skilled	42.6	42.4	25.0	42.1	33.3	48.5	37.4	36.4
Unskilled or never worked	10.7	18.2	28.6	18.4	53.3	28.3	22.0	27.3
% of Mothers now working	13.8	27.4	29.4	19.0	6.2	24.4	15.2	11.5
Mother's Occupational Level, %								
Clerical, Technical or above	42.4	45.3	42.4	33.3	26.7	27.6	39.8	45.5
Skilled or semi-skilled	32.8	25.0	15.2	23.1	20.0	39.0	30.1	36.4
Unskilled or never worked	24.8	29.7	42.4	43.6	53.3	33.3	30.1	18.2

* 40 interviews with no "father figure" omitted.

TABLE 12

EDUCATION OF FATHER AND MOTHER
ACCORDING TO PATIENT GROUP

EDUCATION	PATIENT GROUP							
	INPATIENT					OUTPATIENT		
	Cont.	Acc.	Ing.	FTT	Abuse	Cont.	Acc.	Ing.
Father *, %								
Less than High School	28.3	23.8	20.7	19.4	50.0	42.9	29.8	24.0
High School Grad.	30.7	28.6	44.8	41.7	28.6	34.7	35.1	40.0
More than High School	40.9	47.6	34.5	38.9	21.4	22.4	35.1	36.0
Mother, %								
Less than High School	27.4	26.8	35.3	42.9	62.5	37.3	36.8	38.5
High School Grad.	40.0	33.8	35.3	42.9	18.8	40.7	34.0	26.9
More than High School	32.6	39.4	29.4	14.3	18.8	22.0	29.2	34.6

* 40 interviews with no "father figure" omitted.

TABLE 13

RACE AND EDUCATION OF MOTHER
ACCORDING TO MAJOR PATIENT GROUP

RACE AND EDUCATION	PATIENT GROUP			
	INPATIENT		OUTPATIENT	
	Control	Case	Control	Case
Non-White				
High School or less	29	47	53	55
More than High School	8	8	12	9
Total	37	55	65	64
White				
High School or less	65	71	40	43
More than High School	36	39	14	31
Total	101	110	54	74

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FIG. 5. PERCENT DISTRIBUTION OF INPATIENT CONTROL AND OUTPATIENT CONTROL ACCORDING TO CUMULATIVE STRESS INDEX

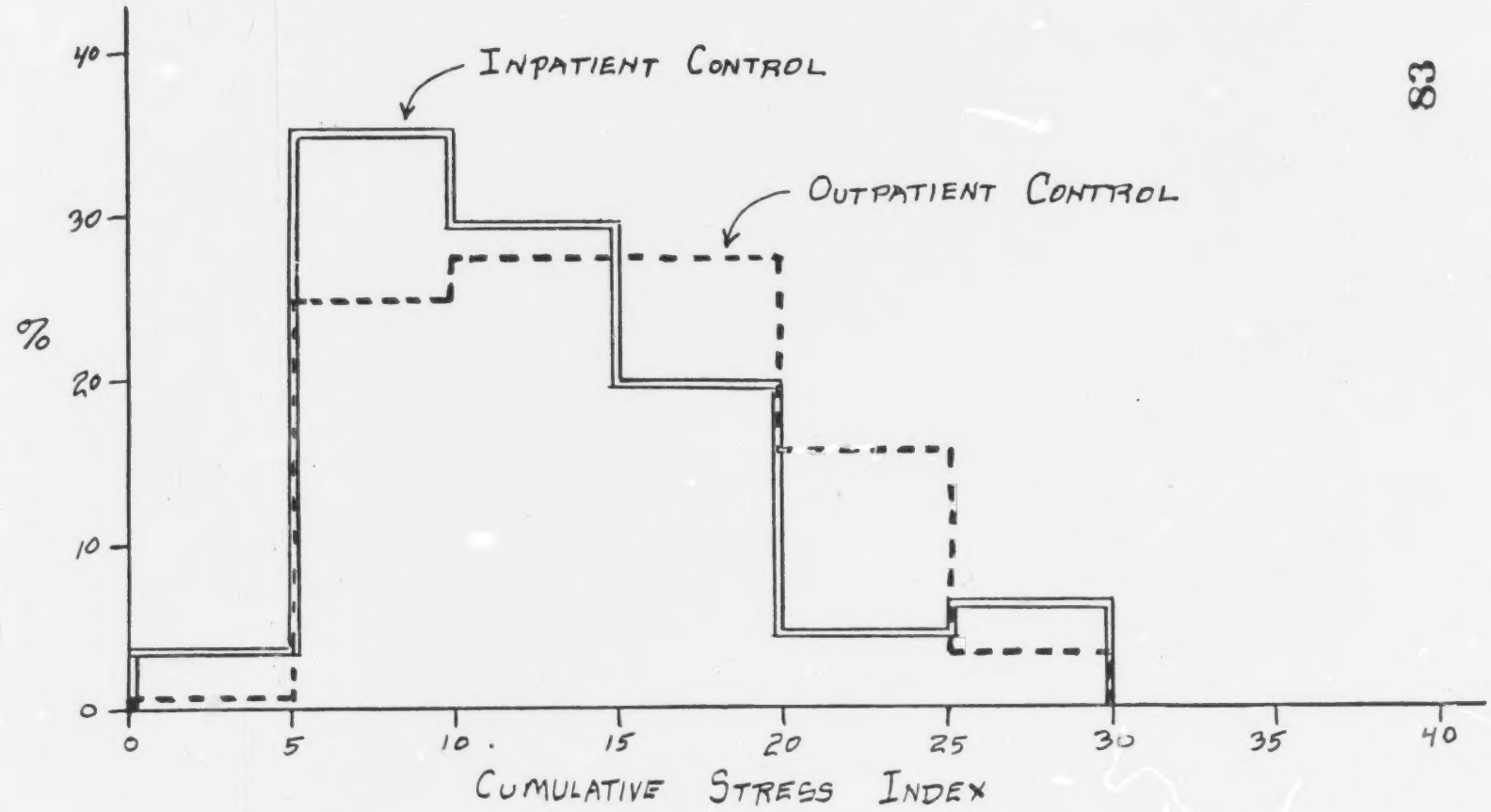

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FIG. 3. PERCENT DISTRIBUTION OF INPATIENT CONTROL AND INPATIENT ABUSE ACCORDING TO CUMULATIVE STRESS INDEX

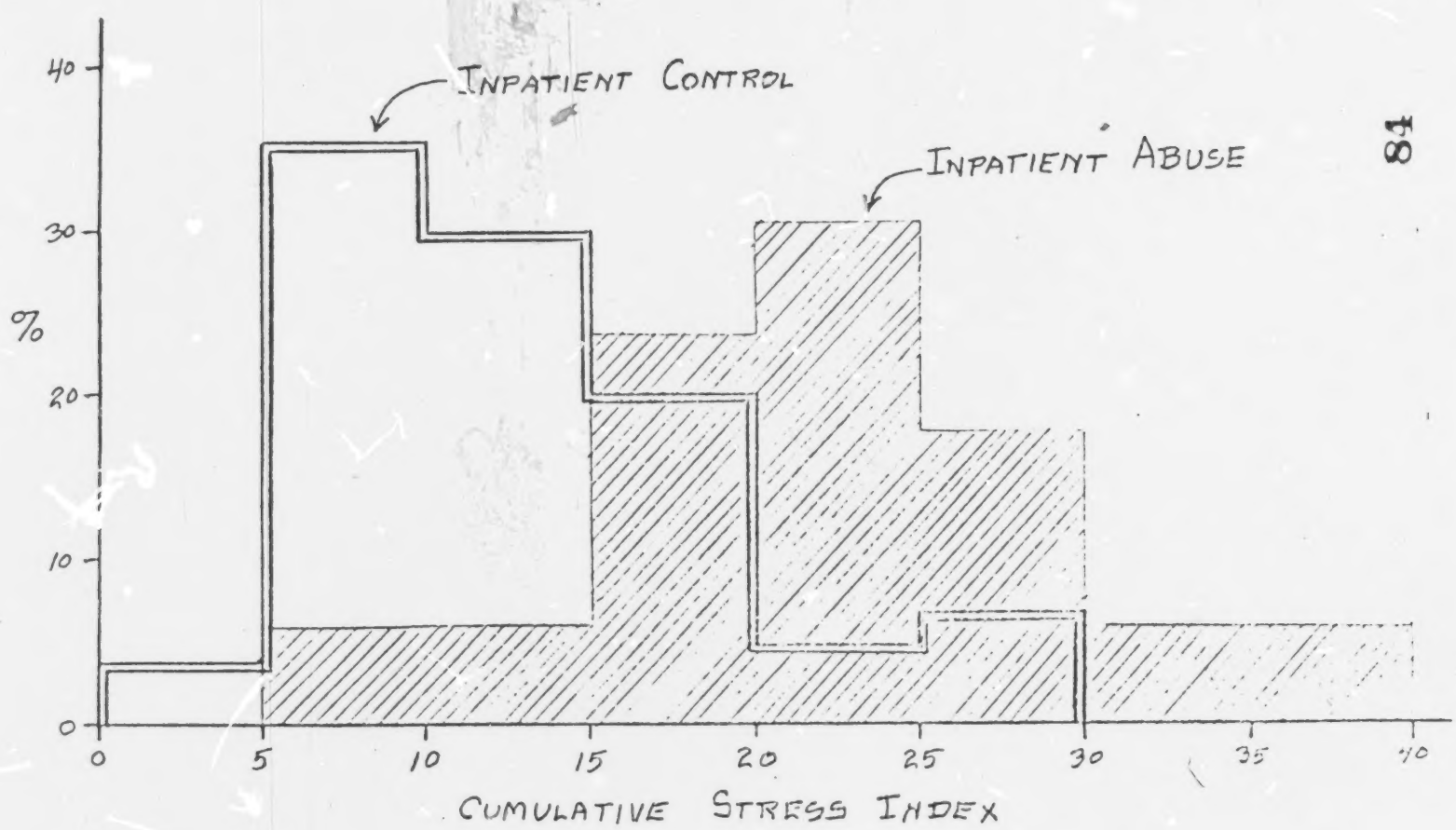

FIG. 4 PERCENT DISTRIBUTION OF INPATIENT CONTROL AND INPATIENT FAILURE TO THRIVE ACCORDING TO CUMULATIVE STRESS INDEX

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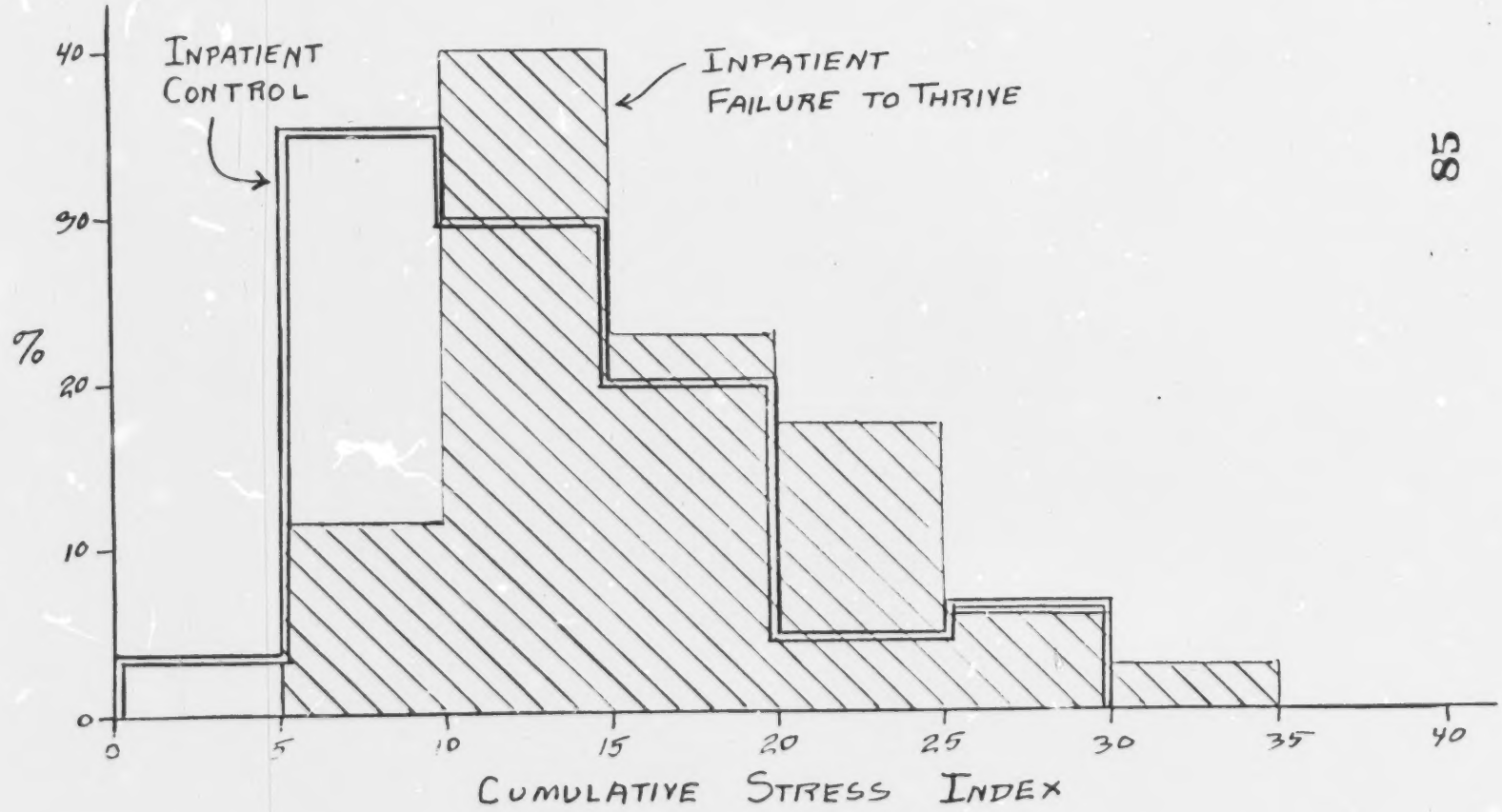

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FIG 6. INPATIENT GROUP MEAN STRESS SCORES
STANDARDIZED TO INPATIENT CONTROL MEAN AND STD. DEV.

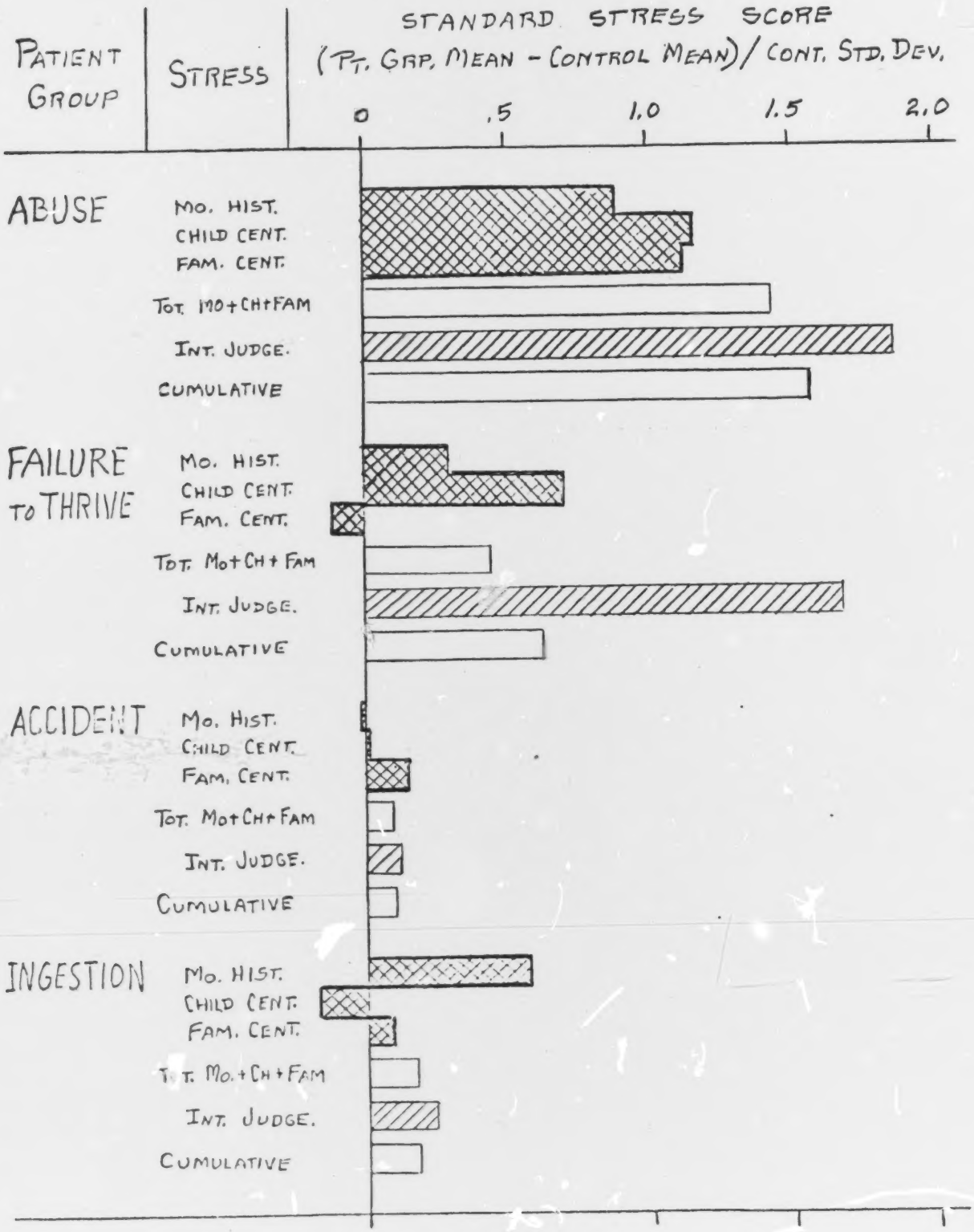

TABLE 14

HISTORICAL STRESS SCORES
ACCORDING TO PATIENT GROUP

HISTORICAL STRESS SCORES	PATIENT GROUP							
	INPATIENT					OUTPATIENT		
	Cont.	Acc.	Ing.	FTT	Abuse	Cont.	Acc.	Ing.
Historical Household Disruption								
Sig.*		+	+++	+++	++++		-	-
Mean	1.63	1.75	2.91	2.93	4.81	2.50	2.26	2.39
Std. Dev.	2.76	2.80	3.23	3.25	3.64	2.98	2.90	3.02
Historical Illness								
Sig.		+	+	+	+		-	+
Mean	.41	.44	.65	.57	.69	.55	.42	.89
Std. Dev.	.84	.78	1.25	1.13	.79	.92	.86	1.11
Total Historical								
Sig.		+	+++	+++	++++		-	+
Mean	2.04	2.19	3.56	3.50	5.50	3.04	2.68	3.27
Std. Dev.	2.99	3.04	3.99	3.88	3.90	3.33	3.07	3.28

* Significance of difference from control mean by one-tailed t-test.
- = Difference in direction opposite to hypothesis
+ = Diff. in Dir. of Hyp., $P > .05$
++ = Diff. in Dir. of Hyp., $.05 > P > .01$
+++ = Diff. in Dir. of Hyp., $.01 > P > .001$
++++ = Diff. in Dir. of Hyp., $.001 > P$

TABLE 15

CONTEMPORANEOUS STRESS SCORES
ACCORDING TO PATIENT GROUP

CONTEMPORANEOUS STRESS SCORES	PATIENT GROUP							
	INPATIENT					OUTPATIENT		
	Cont.	Acc.	Ing.	FTT	Abuse	Cont.	Acc.	Ing.
Contemporaneous Household Disruption								
Sig.*		++++	++	+	++++		+	+++
Mean	.75	1.45	1.15	1.07	2.62	.98	1.17	1.77
Std. Dev.	1.18	1.78	1.37	1.63	2.06	1.37	1.67	1.92
Contemporaneous Child Centered Stress								
Sig.		++	-	+	+++		++	+
Mean	1.23	1.55	.85	1.48	2.12	1.14	1.52	1.62
Std. Dev.	1.17	1.40	1.18	1.15	1.31	1.40	1.49	1.70
Contemporaneous Miscellaneous Problems								
Sig.		++	++++	+	+++		-	+
Mean	1.25	1.70	2.21	1.33	2.38	1.97	1.86	2.12
Std. Dev.	1.32	1.66	1.75	1.26	1.82	1.64	1.51	2.16
Total Contemporaneous								
Sig.*		++++	++	+	++++		+	++
Mean	3.23	4.70	4.21	3.88	7.12	4.08	4.54	5.50
Std. Dev.	2.42	3.51	2.84	2.88	3.56	2.88	3.10	3.89

* Statistical significance. See Note on Table 14.

TABLE 16

CONTEMPORANEOUS STRENGTH SCORES
ACCORDING TO PATIENT GROUP

CONTEMPORANEOUS STRENGTH SCORES	PATIENT GROUP							
	INPATIENT					OUTPATIENT		
	Cont.	Acc.	Ing.	FTT	Abuse	Cont.	Acc.	Ing.
Maternal and Social Environment Strengths								
Sig.*		+	+	+++	++++		-	+
Mean	6.26	6.04	6.09	5.67	5.31	5.62	5.73	5.61
Std. Dev.	1.14	1.35	.90	1.44	1.14	1.43	1.48	1.55
Q-Sort (N=404)** Ideal Mother Score								
Sig.		++	+	++++	++++		+	+
Mean	14.85	13.78	14.68	10.94	7.60	13.05	12.89	12.41
Std. Dev.	3.32	4.32	3.47	4.70	4.22	3.37	4.29	4.62
Total (N=404) Contemporaneous Strength Score								
Sig.		++	+	++++	++++		+	+
Mean	21.08	19.88	20.77	16.53	13.00	18.82	18.69	18.12
Std. Dev.	3.67	5.08	3.68	5.60	4.62	4.14	5.14	5.21

*Statistical significance. See note on Table 14.
**Q-Sort data available for the last 404 of the 560 interviews.

FIG. 7. AVERAGE POSITION ASSIGNED TO 42 Q-SORT DESCRIPTIONS BY 4 INTERVIEWERS CHARACTERIZING A TYPICAL ABUSING MOTHER AND A TYPICAL FAILURE TO THRIVE MOTHER.

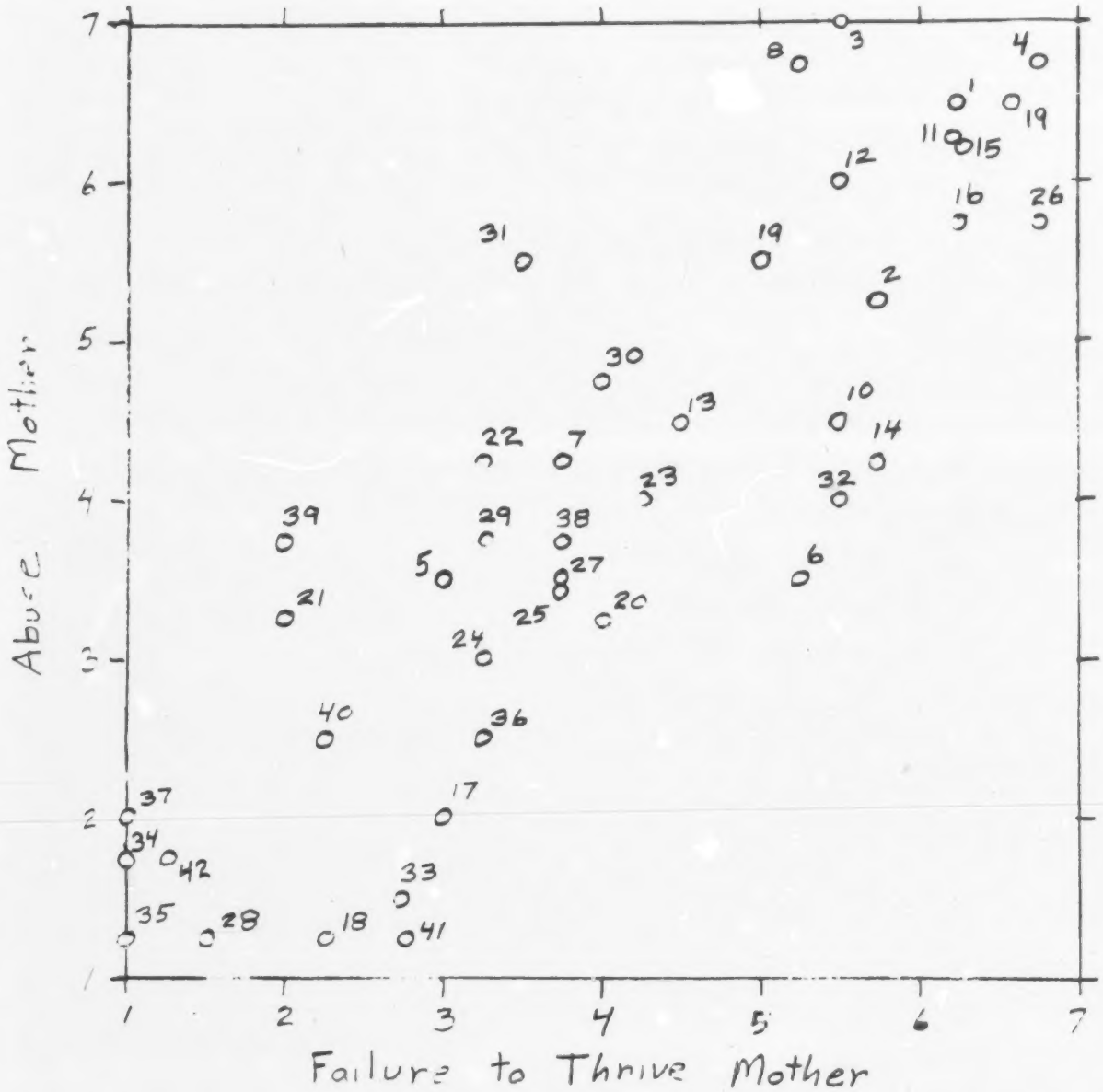

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FIG. 8. AVERAGE POSITION ASSIGNED TO 42 Q-SORT DESCRIPTORS BY 4 INTERVIEWERS CHARACTERIZING COMBINED ABUSE AND FAILURE TO THRIVE MOTHERS AND AN IDEAL MOTHER.

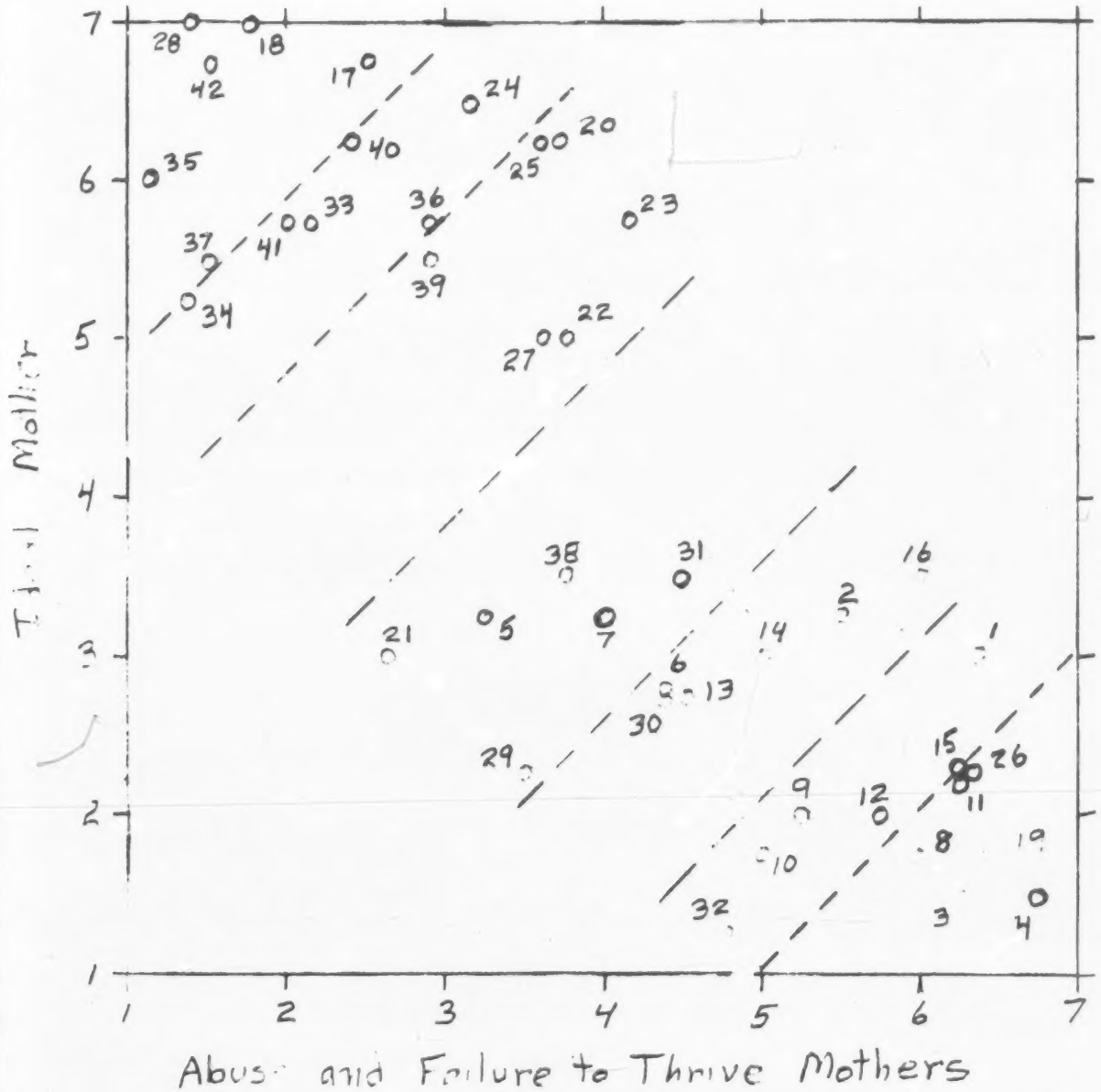

TABLE 17

MOTHER-CHILD INTERACTION STRESS SCORES
ACCORDING TO PATIENT GROUP

MOTHER-CHILD INTERACTION STRESS SCORE	PATIENT GROUP							
	INPATIENT					OUTPATIENT		
	Cont.	Acc.	Ing.	FTT	Abuse	Cont.	Acc.	Ing.
Negative Response to Child (N = 517)								
Sig.*		-	+	+	+		-	+++
Mean	1.61	1.42	1.73	1.80	1.87	1.43	1.39	1.87
Std. Dev.	.70	.68	.76	.87	1.19	.76	.66	.92
Risk and Lack of Protection for child (N = 513)								
Sig.		++++	+++	++++	++++		++	+++
Mean	3.14	4.04	3.97	5.45	8.19	3.37	4.00	4.58
Std. Dev.	1.56	2.39	2.25	2.44	2.17	1.44	2.36	2.70
Total (N = 482)** Mo-Ch Interaction Stress Score								
Sig.		+++	++	++++	++++		++	++++
Mean	4.76	5.46	5.52	7.33	9.93	4.75	5.41	6.44
Std. Dev.	1.63	2.39	2.31	2.56	2.96	1.64	2.48	2.98

* Statistical significance. See note on Table 14.
** Number of interviews reduced because of missing data.

TABLE 18

MISCELLANEOUS STRESS SCORES
ACCORDING TO PATIENT GROUP

MISCELLANEOUS STRESS SCORES	PATIENT GROUP							
	INPATIENT					OUTPATIENT		
	Cont.	Acc.	Ing.	FTT	Abuse	Cont.	Acc.	Ing.
FTT Stress Score								
Sig.*		-	-	++++	-		-	-
Mean	1.90	1.14	1.97	4.10	1.75	1.66	1.40	1.50
Std. Dev.	1.85	1.38	1.93	1.62	1.48	1.60	1.41	1.77
Ingestion Stress Score								
Sig.		++	++++	+	+++		-	+
Mean	.88	1.19	1.94	1.02	1.56	1.38	1.37	1.65
Std. Dev.	1.02	1.37	1.58	1.09	.96	1.26	1.27	1.55
Residual Item Stress Score								
Sig.		++	-	+++	+		-	-
Mean	1.36	1.64	.97	1.81	1.75	1.46	1.30	1.23
Std. Dev.	1.11	1.22	.87	1.02	1.29	1.08	.98	3.16

* Statistical Significance. See note on Table 14.

TABLE 19

SELF PERCEPTION STRENGTH SCORE WITH
COMBINED HISTORICAL AND CONTEMPORANEOUS
HOUSEHOLD DISRUPTION STRESS SCORES
ACCORDING TO INPATIENT GROUP

STRENGTH STRESS SCORE	INPATIENT GROUP				
	INPATIENT				
	Cont.	Acc.	Ing.	FTT	Abuse
SELF PERCEPTION STRENGTH					
Mean	5.38	5.11	4.76	4.83	4.31
Std. Dev.	1.36	1.45	1.52	1.46	1.54
Diff. from Cont.					
Sig.*		+	++	++	+++
Mean Diff.		-.27	-.61	-.54	-1.06
t		-1.32	-2.29	-2.22	-2.92
Hist.+ Contemp. Household Disruption**					
Mean	3.12	4.66	5.21	5.07	10.06
Std. Dev.	3.93	5.00	4.66	5.37	6.50
Diff. from Cont.					
Sig.		+++	+++	+++	++++
Mean Diff.		1.54	2.08	1.95	6.94
t		2.45	2.67	2.57	6.18
Hist.+ Contemp. Household Disruption - Self Percep. Strength***					
Mean	7.75	9.55	10.44	10.24	15.75
Std. Dev.	4.29	5.26	4.71	5.80	6.66
Diff. from Cont.					
Sig.		+++	++++	+++	++++
Mean Diff.		1.80	2.70	2.49	8.00
t		2.68	3.21	3.02	6.62

* Statistical significance. See note on Table 14.
** (Hist. Hshld. Dis. Score, from Table 14) + 2 (Contemp. Hshld. Dis. Score, from Table 15)
*** (Hist. + Contemp. Hshld. Dis. Score, above) - (Self Percep. Strength Score, above) + 10

TABLE 20

HISTORICAL HOUSEHOLD DISRUPTION
ACCORDING TO RACE-EDUCATION BY INPATIENT GROUP

RACE-EDUCATION	INPATIENT GROUP		
	Control	Accident	Abuse, FTT and Ing.
Total			
Sig.*		+	++++
Mean	1.63	1.75	3.25
Std. Dev.	2.76	2.80	3.35
Non-White			
Sig.		+	++
Mean	2.62	2.65	4.37
Std. Dev.	3.34	3.37	3.36
White ≤ High School			
Sig.		-	++
Mean	1.46	1.00	2.74
Std. Dev.	2.80	2.15	3.10
White > High School			
Sig.		+	++
Mean	.92	1.65	2.31
Std. Dev.	1.54	2.65	3.75

* Statistical significance. See note on Table 14.

TABLE 21

CONTEMPORANEOUS HOUSEHOLD DISRUPTION
ACCORDING TO RACE-EDUCATION BY INPATIENT GROUP

RACE-EDUCATION	INPATIENT GROUP		
	Control	Accident	Abuse, FTT and Ing.
Total			
Sig.*		++++	++++
Mean	.75	1.45	1.37
Std. Dev.	1.18	1.78	1.71
Non-White			
Sig.		++	+++
Mean	.71	1.78	1.53
Std. Dev.	1.08	2.30	1.54
White ≤ High School			
Sig.		+	+++
Mean	.74	.83	1.51
Std. Dev.	1.28	1.20	1.92
White > High School			
Sig.		+++	-
Mean	.81	1.73	.46
Std. Dev.	1.14	1.61	.88

* Statistical significance. See note on Table 14.

TABLE 22

CONTEMPORANEOUS CHILD CENTERED STRESS
ACCORDING TO RACE-EDUCATION BY INPATIENT GROUP

RACE-EDUCATION	INPATIENT GROUP		
	Control	Accidents	Abuse, FTT and Ing.
Total			
Sig.*		++	+
Mean	1.23	1.55	1.36
Std. Dev.	1.17	1.40	1.26
Non-white			
Sig.		-	-
Mean	1.46	1.22	.84
Std. Dev.	1.17	1.04	1.14
White ≤ High School			
Sig.		+	++
Mean	1.17	1.58	1.79
Std. Dev.	1.14	1.58	1.18
White > High School			
Sig.		++	-
Mean	1.11	1.81	1.08
Std. Dev.	1.24	1.50	1.38

* Statistical significance. See note on Table 14.

TABLE 23

MISCELLANEOUS CONTEMPORANEOUS PROBLEMS
ACCORDING TO RACE-EDUCATION BY INPATIENT GROUP

RACE-EDUCATION	INPATIENT GROUP		
	Control	Accident	Abuse, FTT and Ing.
Total			
Sig.*		++	+++
Mean	1.25	1.70	1.84
Std. Dev.	1.32	1.66	1.61
Non-White			
Sig.		+	+
Mean	2.05	2.56	2.22
Std. Dev.	1.53	1.78	1.62
White ≤ High School			
Sig.		+	+++
Mean	1.11	1.50	1.83
Std. Dev.	1.00	1.53	1.59
White > High School			
Sig.		+	+
Mean	.69	1.11	.92
Std. Dev.	1.24	1.37	1.38

* Statistical significance. See note on Table 14.

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TABLE 24

MATERNAL AND SOCIAL ENVIRONMENTAL STRENGTHS
ACCORDING TO RACE-EDUCATION BY INPATIENT GROUP

RACE-EDUCATION	INPATIENT GROUP		
	Control	Accident	FTT Abuse, and Ing.
Total			
Sig.*		+	++++
Mean	6.26	6.04	5.76
Std. Dev.	1.14	1.35	1.23
Non-white			
Sig.		+	+
Mean	5.78	5.48	5.75
Std. Dev.	1.55	1.78	1.05
White ≤ High School			
Sig.		+	++++
Mean	6.31	6.08	5.57
Std. Dev.	1.00	1.21	1.36
White > High School			
Sig.		+	+
Mean	6.67	6.50	6.46
Std. Dev.	.58	.76	.97

* Statistical significance. See note on Table 14.

TABLE 25

Q-SORT IDEAL MOTHER SCORE

ACCORDING TO RACE-EDUCATION BY INPATIENT GROUP

RACE-EDUCATION	INPATIENT GROUP		
	CONTROL	ACCIDENT	ABUSE, FTT and ING.
TOTAL			
Sig*		++	++++
Mean	14.85	13.78	12.01
Std. Dev.	3.32	4.32	4.80
Non-White			
Sig*		+	+
Mean	14.04	13.30	13.23
Std. Dev.	2.97	4.76	4.31
White ≤ High School			
Sig*		+	+
Mean	14.60	13.27	10.66
Std. Dev.	3.65	4.66	4.70
White > High School			
Sig*		+	+
Mean	15.91	14.73	14.70
Std. Dev.	2.71	3.52	5.22

*Statistical significance. See note on Table 14

TABLE 26

RISK AND LACK OF PROTECTION FOR CHILD
ACCORDING TO RACE-EDUCATION BY INPATIENT GROUP

RACE-EDUCATION	INPATIENT GROUP		
	Control	Accident	Abuse, FTT and Ing.
Total			
Sig.*		++++	++++
Mean	3.14	4.04	5.38
Std. Dev.	1.56	2.39	2.73
Non-White			
Sig.		+	+++
Mean	3.74	4.68	5.13
Std. Dev.	1.74	2.61	2.76
White ≤ High School			
Sig.		++	++++
Mean	2.94	3.75	5.92
Std. Dev.	1.34	1.89	2.52
White > High School			
Sig.		++	+
Mean	2.89	3.77	3.92
Std. Dev.	1.62	2.58	3.03

* Statistical significance. See note on Table 14.

TABLE 27

SELF PERCEPTION STRENGTH SCORE
ACCORDING TO RACE-EDUCATION BY INPATIENT GROUP

RACE-EDUCATION	INPATIENT GROUP		
	Control	Accident	Abuse, FTT and Ing.
Total			
Sig.*		+	++++
Mean	5.38	5.11	4.72
Std. Dev.	1.36	1.45	1.49
Non-White			
Sig.		+	+++
Mean	5.24	5.00	4.38
Std. Dev.	1.34	1.45	1.38
White ≤ High School			
Sig.		+	++
Mean	5.38	4.83	4.83
Std.Dev.	1.42	1.55	1.55
White → High School			
Sig.		+	+
Mean	5.50	5.46	5.15
Std. Dev.	1.30	1.33	1.46

* Statistical Significance. See Note on Table 14.

TABLE 28

HISTORICAL AND CONTEMPORANEOUS
HOUSEHOLD DISRUPTION**
ACCORDING TO RACE-EDUCATION BY INPATIENT GROUP

RACE-EDUCATION	INPATIENT GROUP		
	Control	Accident	Abuse, FTT and Ing.
Total			
Sig.*		+++	++++
Mean	3.12	4.66	5.99
Std. Dev.	3.93	5.00	5.60
Non-White			
Sig.		+	+++
Mean	4.03	6.22	7.44
Std. Dev.	4.28	6.16	5.53
White ≤ High School			
Sig.		-	+++
Mean	2.94	2.67	5.76
Std. Dev.	4.06	3.03	5.78
White > High School			
Sig.		+++	+
Mean	2.53	5.12	3.23
Std. Dev.	3.18	4.89	3.90

* Statistical significance. See note on Table 14.
** (Hist. Hshld. Disrupt.) +2 (Contemp. Hshld. Disrupt.)

TABLE 29

HISTORICAL AND CONTEMPORANEOUS HOUSEHOLD DISRUPTION
STRESS SCORE MINUS SELF PERCEPTION STRENGTH SCORE (+10)
ACCORDING TO RACE-EDUCATION BY INPATIENT GROUP

RACE-EDUCATION	INPATIENT GROUP		
	Control	Accident	Abuse, FTT and Ing.
Total			
Sig.*		+++	++++
Mean	7.75	9.55	11.27
Std. Dev.	4.29	5.26	5.90
Non-White			
Sig.		++	++++
Mean	8.78	11.22	13.06
Std. Dev.	4.70	6.54	6.04
White ≤ High School			
Sig.		+	++++
Mean	7.55	7.83	10.94
Std. Dev.	4.30	3.23	6.02
White > High School			
Sig.		+++	+
Mean	7.03	9.65	8.08
Std. Dev.	3.72	5.18	3.28

* Statistical significance. See note on Table 14.

FIG. 9. MEAN SCORES FOR HOUSEHOLD DISRUPTION (Standardized to Inpatient Controls) ACCORDING TO RACE-EDUCATION BY INPATIENT GROUP

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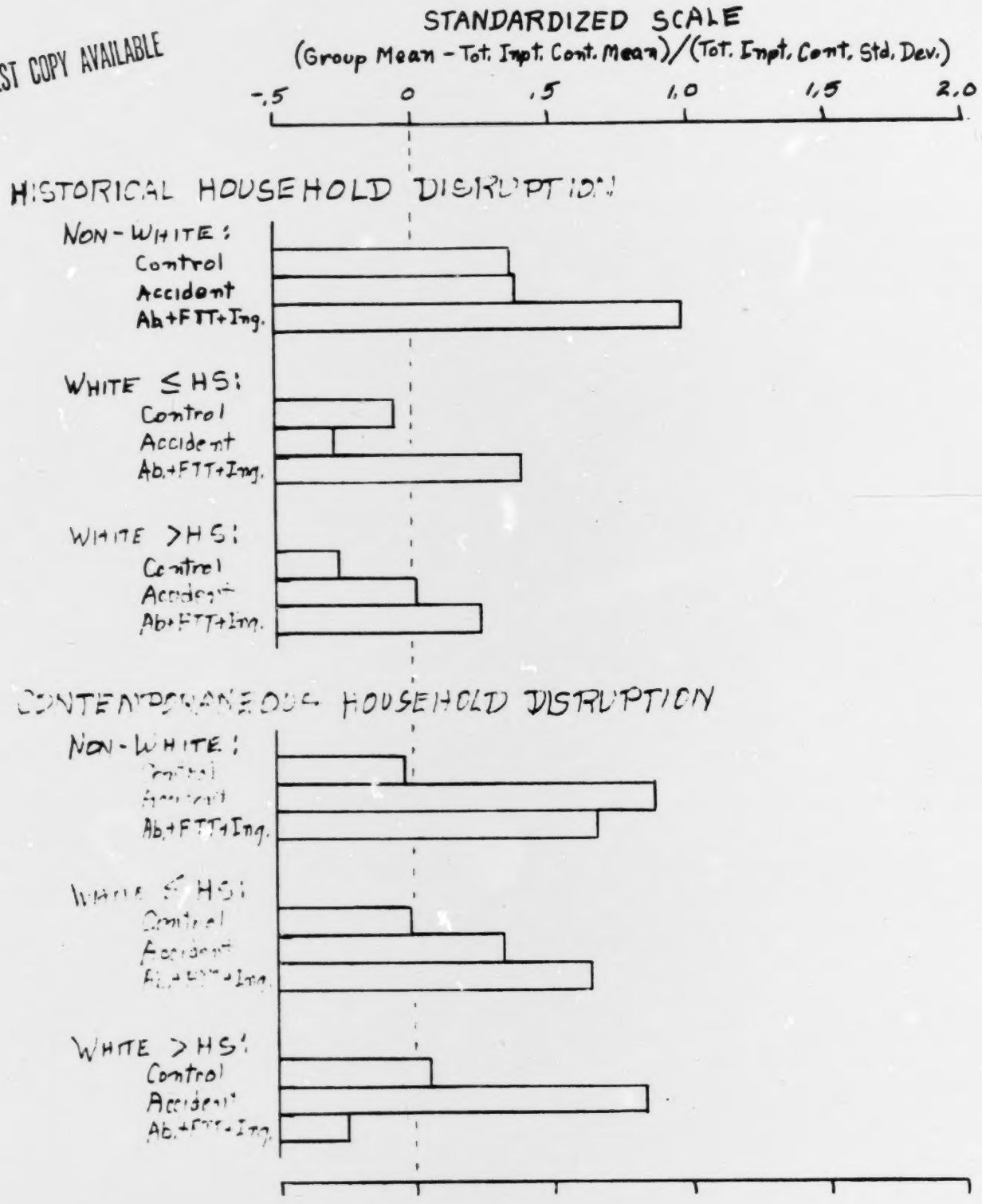

FIG. 10, MEAN SCORES FOR CONTEMPORANEOUS STRESSES (Standardized to Inpatient Controls) ACCORDING TO RACE-EDUCATION BY INPATIENT GROUP

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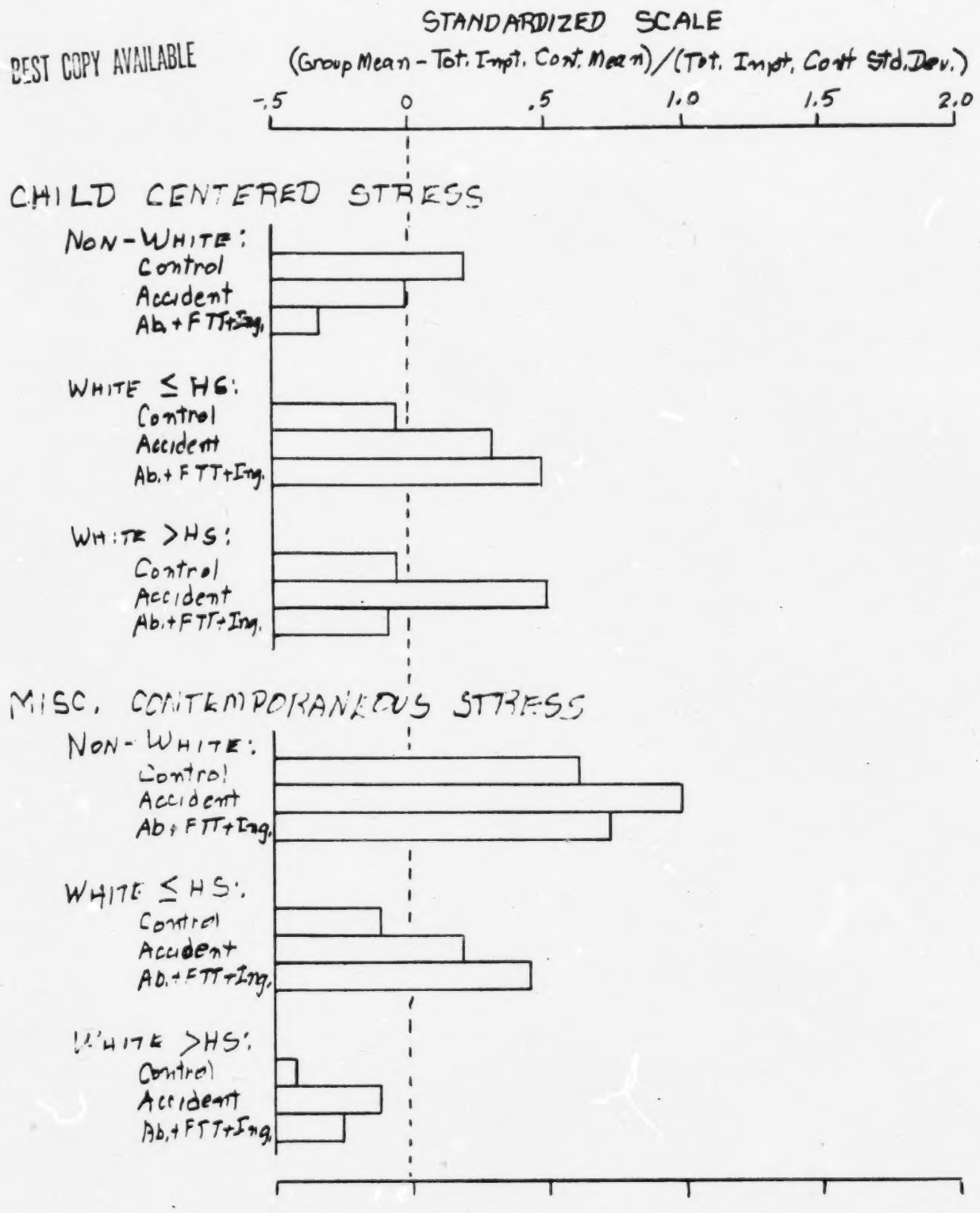

FIG. 11. MEAN SCORES FOR CONTEMPORANEOUS STRENGTHS (standardized to Inpatient Controls) ACCORDING TO RACE-EDUCATION BY INPATIENT GROUP

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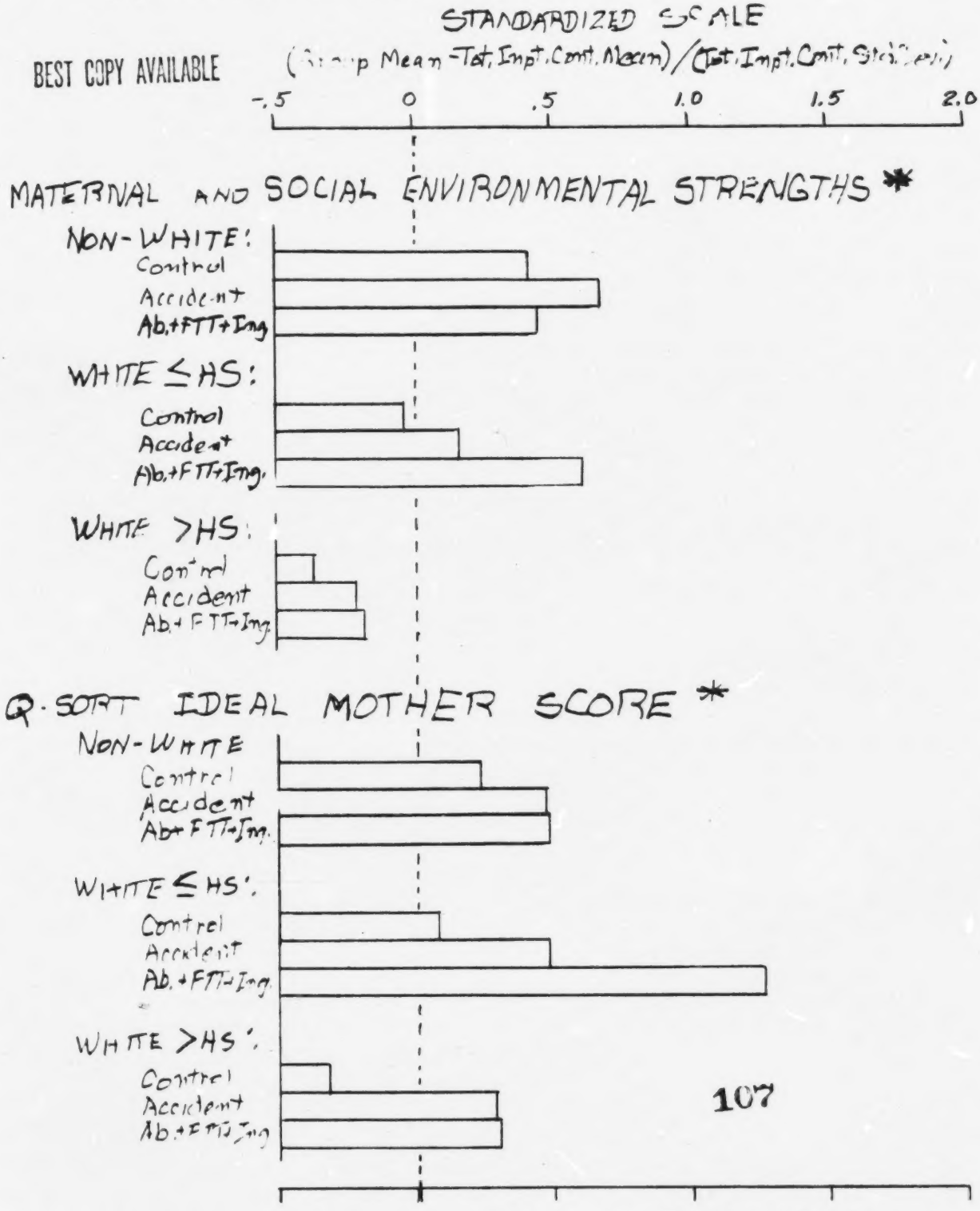

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* Negative Strength Scores are plotted, in order to be visually consistant with the graphs of Stress Scores.

FIG. 12. MEAN SCORES FOR RISK AND SELF PERCEPTION (Standardized to Inpatient Controls) ACCORDING TO RACE-EDUCATION BY INPATIENT GROUP

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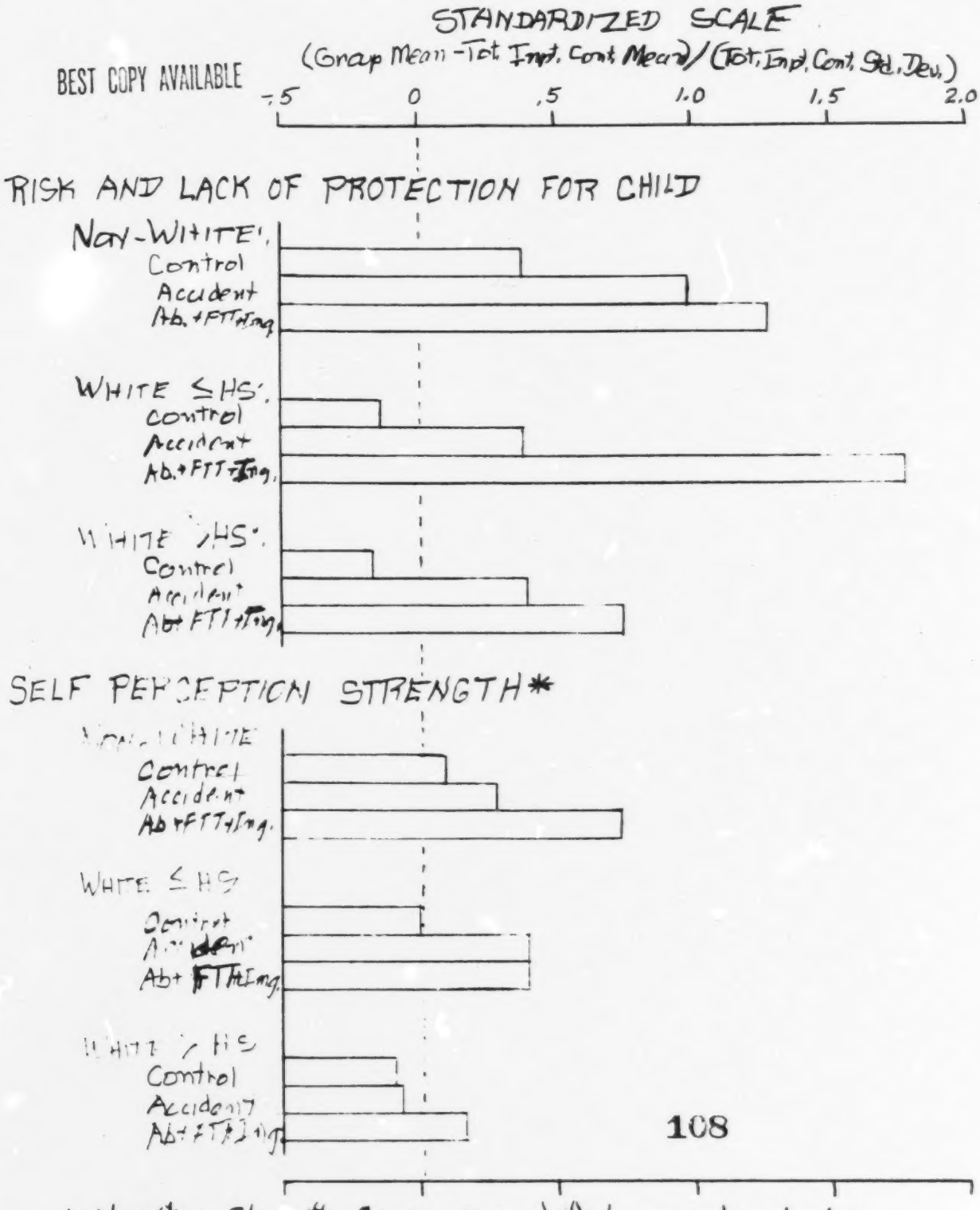

* Negative Strength Scores are plotted, in order to be visually consistent with the graphs of Stress Scores

FIG. 13, MEAN SCORES FOR STRESS-STRENGTH COMBINATIONS (standardized to Inpatient Controls) ACCORDING TO RACE-EDUCATION BY INPATIENT GROUP

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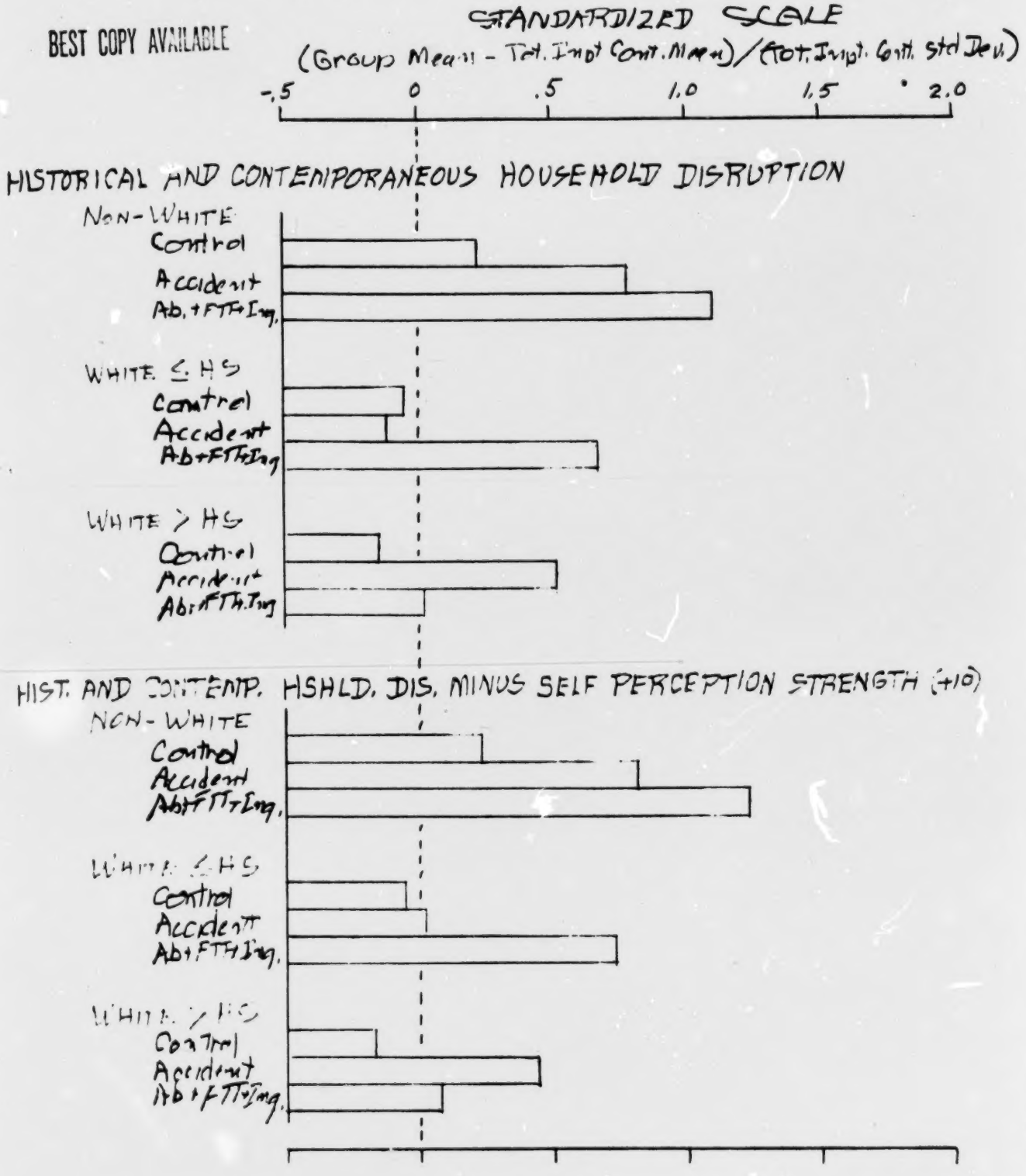

TABLE 30

ODDS RATIO* OF INPATIENT CASES COMPARED TO CONTROLS FOR ITEMS IN THE HISTORICAL HOUSEHOLD DISRUPTION SCORE

SCORE ITEM AND INPATIENT GROUP	TOTAL NO.	NO. WITH ITEM	ODDS RATIO
Broken Family 4 Years of Age			
Control	138	22	
Accident	73	17	1.60
Abuse + FTT + Ingestion	92	35	3.23
Broken Family 4-16 Years of Age			
Control	138	37	
Accident	73	24	1.33
Abuse + FTT + Ingestion	92	43	2.39
Broken Family 17 Years to Conception of Child			
Control	138	38	
Accident	73	24	1.28
Abuse + FTT + Ingestion	92	35	1.61
Mobility 4 Years of Age			
Control	138	19	
Accident	73	9	.88
Abuse + FTT + Ingestion	92	24	2.21
Mobility 4-16 Years of Age			
Control	138	19	
Accident	73	11	1.11
Abuse + FTT + Ingestion	92	27	2.60
Mobility 17 Years to Conception of Child			
Control	138	25	
Accident	73	8	.55
Abuse + FTT + Ingestion	92	24	1.59
Violence or Neglect			
Control	138	9	
Accident	73	7	1.52
Abuse + FTT + Ingestion	92	18	3.48

*Odds Ratio = $\frac{\text{(No. of Cases with the Item Present) X (No. of Controls with Item Absent)}}{\text{(No. of Cases with the Item Absent) X (No. of Controls with Item Present)}}$

FIG. 14. CUMULATIVE DISTRIBUTION FOR HISTORICAL AND CONTEMPORANEOUS HOUSEHOLD DISRUPTION SCORE MINUS SELF PERCEPTION STRENGTH SCORE FOR INPATIENTS ACCORDING TO PATIENT GROUP

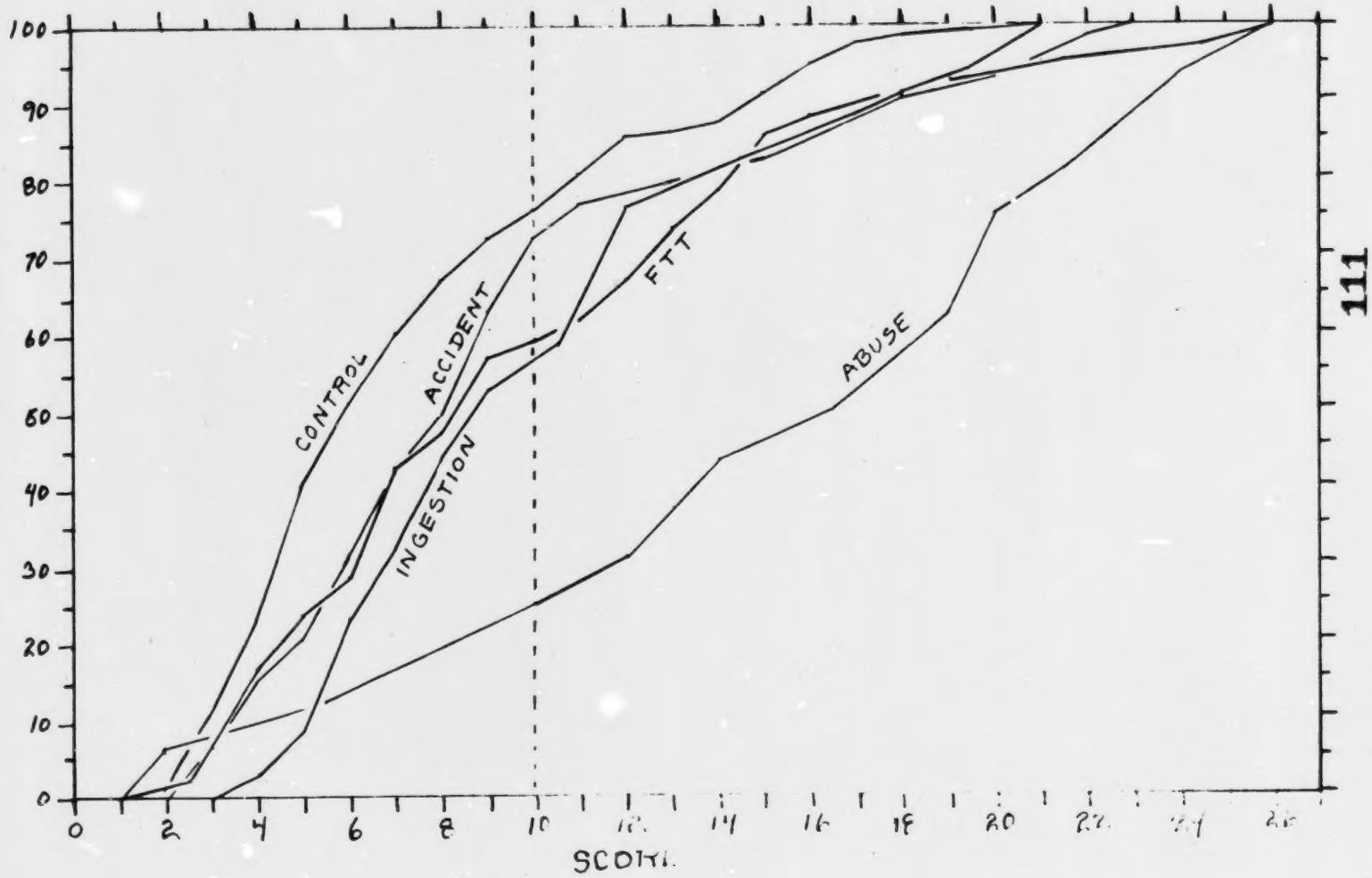

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TABLE 31

ODDS RATIO* OF INPATIENT CASES COMPARED TO CONTROLS FOR ITEMS IN THE HISTORICAL ILLNESS SCORE

SCORE ITEM AND INPATIENT GROUP	TOTAL NO.	NO. WITH ITEM	ODDS RATIO
Mother's Illness 0-16 Years			
Control	138	18	
Accident	73	7	2.02
Abuse + FTT + Ingestion	92	19	1.73
Mother's Illness 17 Yrs. to Concep. of Child			
Control	138	13	
Accident	73	4	.55
Abuse + FTT + Ingestion	92	13	1.58
Illness in Mo. Family 0-16 Yrs.			
Control	138	14	
Accident	73	11	1.57
Abuse + FTT + Ingestion	92	14	1.58
Illness in Mo. Family 17 Yrs. to Concep. of Child			
Control	138	12	
Accident	73	10	1.66
Abuse + FTT + Ingestion	92	11	1.42

$$\text{Odds Ratio} = \frac{(\text{No. of Cases with the Item Present}) \times (\text{No. of Controls with Item Absent})}{(\text{No. of Cases with the Item Absent}) \times (\text{No. of Controls with Item Present})}$$

FIG. 15. CUMULATIVE DISTRIBUTION FOR HISTORICAL AND CONTEMPORANEOUS HOUSEHOLD DISRUPTION SCORE MINUS SELF PERCEPTION STRENGTH SCORE (+10) NON-WHITE ACCORDING TO PATIENT GROUP

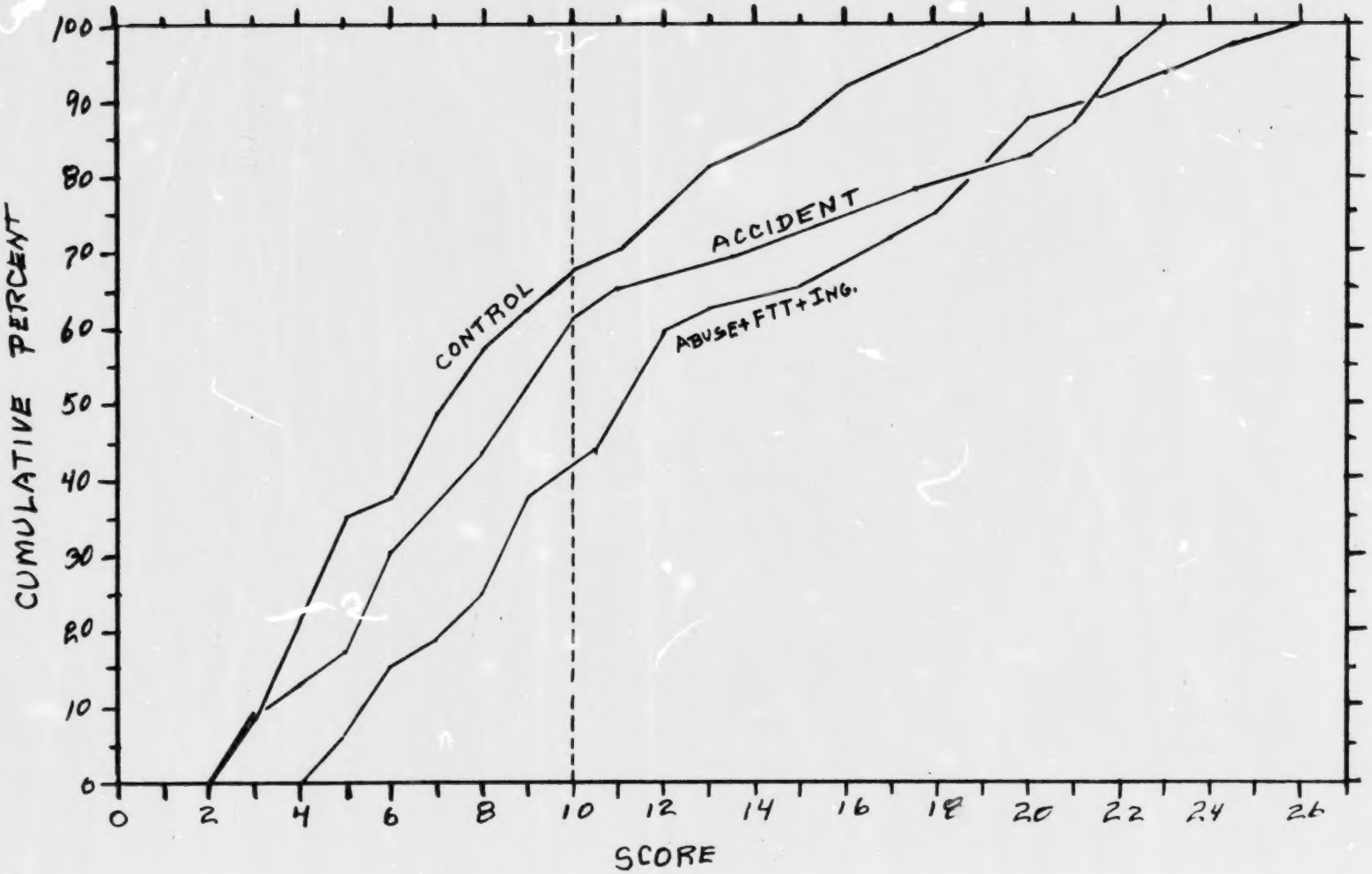

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FIG. 16. CUMULATIVE DISTRIBUTION FOR HISTORICAL AND CONTEMPORANEOUS HOUSEHOLD DISRUPTION SCORE MINUS SELF PERCEPTION STRENGTH SCORE (+10) WHITE WITH HIGH SCHOOL GRADUATION OR LESS ACCORDING TO PATIENT GROUP

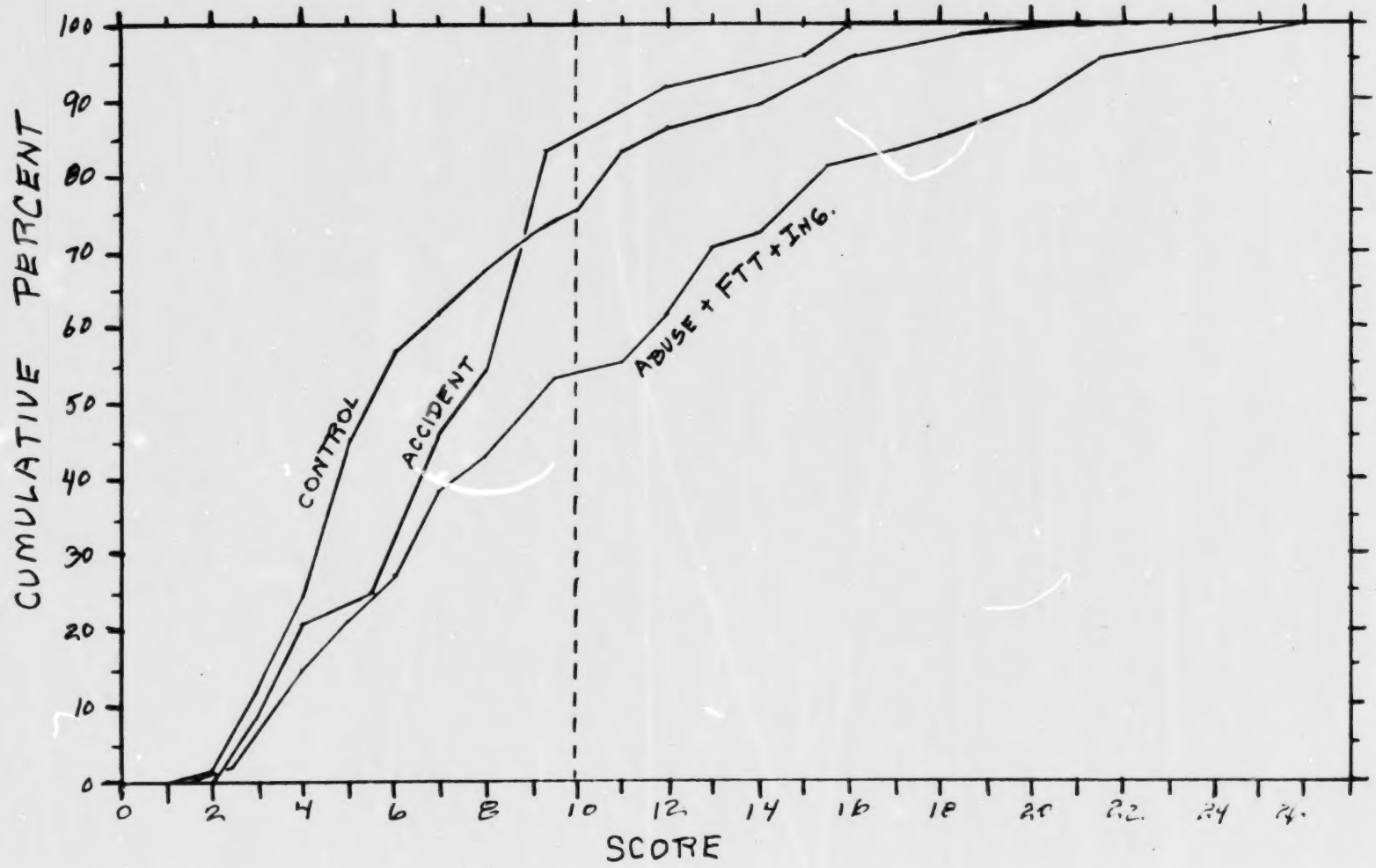

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FIG. 17. CUMULATIVE DISTRIBUTION FOR HISTORICAL AND CONTEMPORANEOUS HOUSEHOLD DISRUPTION MINUS SELF PERCEPTION STRENGTH SCORE (+10) WHITE WITH MORE THAN HIGH SCHOOL GRADUATION ACCORDING TO PATIENT GROUP

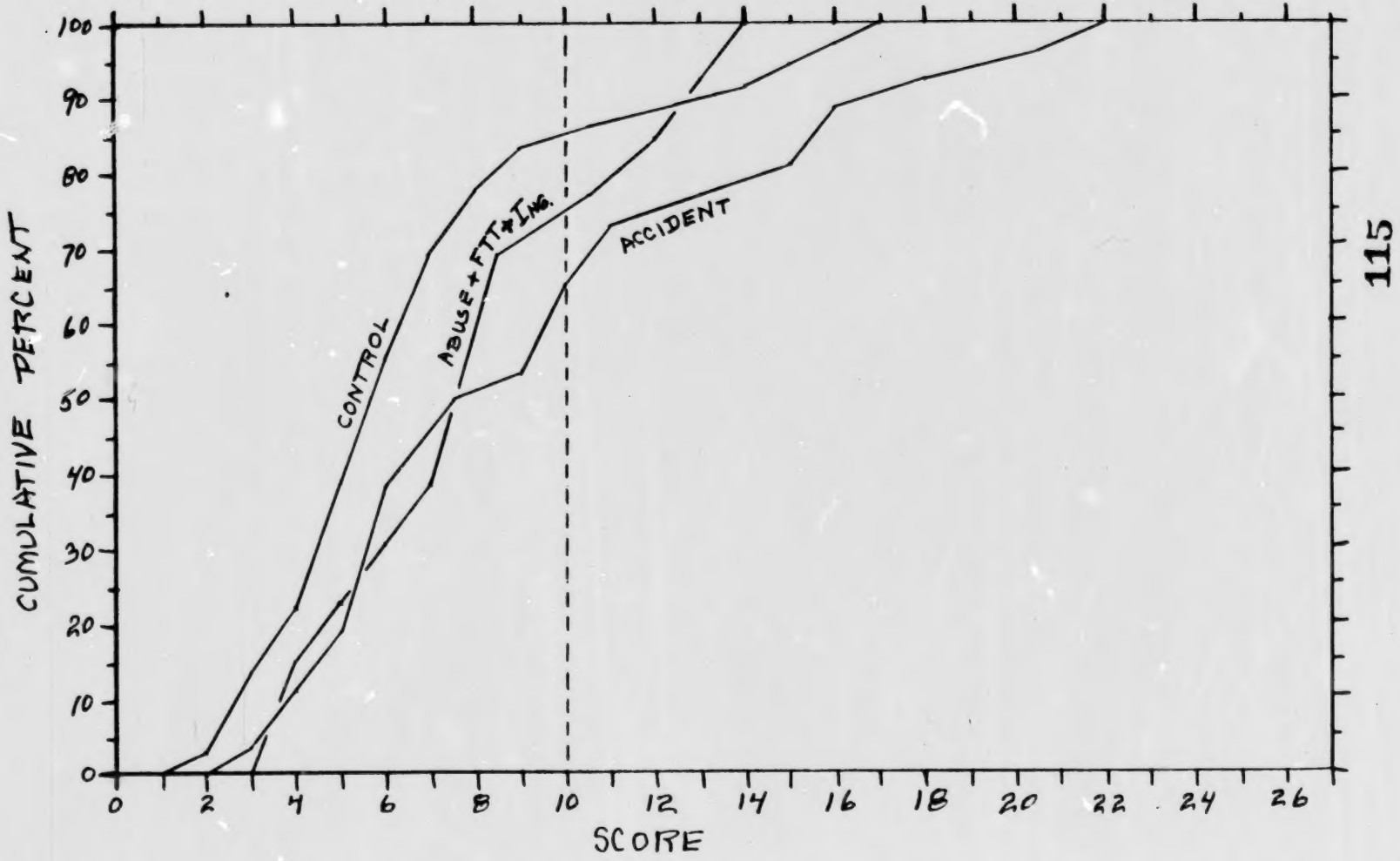

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TABLE 32

[illegible] COMPARED [illegible]
THE CONTEMPORARY HOUSEHOLD DISRUPTION SCORE

SCORE ITEM AND INPATIENT GROUP	TOTAL NO.	NO. WITH ITEM	ODDS RATIO
Two or more moves in past year			
Control	138	5	
Accident	73	5	3.74
Abuse + FTT + Ingestion	92	14	4.77
Recent death in family			
Control	138	22	
Accident	73	18	1.72
Abuse + FTT + Ingestion	92	20	1.46
Sibling <4 Yrs. old living away from home			
Control	138	1	
Accident	73	1	1.90
Abuse + FTT + Ingestion	92	4	6.22
Sibling 4-18 Yrs. living away from home			
Control	138	4	
Accident	73	4	1.94
Abuse + FTT + Ingestion	92	5	1.92
Person moved away in past 3 mos.			
Control	138	7	
Accident	73	11	3.32
Abuse + FTT + Ingestion	92	6	1.30
Marital problems			
Control	138	25	
Accident	73	13	.97
Abuse + FTT + Ingestion	92	16	.95

*Odds Ratio = $\frac{\text{(No. of Cases with the Item Present) X (No. of Controls with Item Absent)}}{\text{(No. of Cases with the Item Absent) X (No. of Controls with Item Present)}}$

TABLE 33

ODDS RATIO* OF INPATIENT CASES COMPARED TO CONTROLS FOR ITEMS IN THE CHILD CENTERED STRESS SCORE

SCORE ITEM AND INPATIENT GROUP	TOTAL NO.	NO. WITH ITEM	ODDS RATIO
Child not wanted at beginning of pregnancy			
Control	138	34	
Accident	73	21	1.23
Abuse + FTT + Ingestion	92	19	.79
Child separated from Mo. more than few days			
Control	138	56	
Accident	73	32	1.14
Abuse + FTT + Ingestion	92	42	1.23
Child hurts himself a lot			
Control	138	11	
Accident	73	14	2.73
Abuse + FTT + Ingestion	92	11	1.56
Child has more accidents than others			
Control	138	6	
Accident	73	7	2.33
Abuse + FTT + Ingestion	92	3	.74

$$\text{*Odds Ratio} = \frac{(\text{No. of Cases with the Item Present}) \times (\text{No. of Controls with Item Absent})}{(\text{No. of Cases with the Item Absent}) \times (\text{No. of Controls with Item Present})}$$

TABLE 34

ODDS RATIO* OF INPATIENT CASES COMPARED TO CONTROLS FOR ITEMS IN THE MISCELLANEOUS CONTEMPORANEOUS PROBLEMS SCORE
(SEE TABLE 35 ALSO)

SCORE ITEM AND INPATIENT GROUP	TOTAL NO.	NO. WITH ITEM	ODDS RATIO
Health Prob. in Family (Not Mo. or Ch.)	**	**	
Control	353	45	
Accident	164	22	1.06
Abuse + FTT + Ingestion	208	38	1.52
Alcohol or Drug Prob (Current)			
Control	138	2	
Accident	73	6	6.08
Abuse + FTT + Ingestion	92	3	2.29
Alcohol or Drug Prob. (Past)			
Control	138	7	
Accident	73	6	1.67
Abuse + FTT + Ingestion	92	6	1.30
Legal Prob.			
Control	138	15	
Accident	73	11	1.45
Abuse + FTT + Ingestion	92	44	1.72
Financial Prob.			
Control	138	52	
Accident	73	35	1.52
Abuse + FTT + Ingestion	92	44	1.51
No Doctor other than Emergency Room			
Control	138	19	
Accident	73	17	1.90
Abuse + FTT + Ingestion	92	25	2.33

$$*\text{Odds Ratio} = \frac{(\text{No. of Cases with the Item Present}) \times (\text{No. of Controls with Item Absent})}{(\text{No. of Cases with the Item Absent}) \times (\text{No. of Controls with Item Present})}$$

** No. of family members

TABLE 35

ODDS RATIO* OF INPATIENT CASES COMPARED TO CONTROLS FOR ITEMS IN THE MISCELLANEOUS CONTEMPORANEOUS PROBLEMS SCORE-PROBLEMS AROUND THE HOUSE***

SCORE ITEM AND INPATIENT GROUP	TOTAL NO.	NO. WITH ITEM	ODDS RATIO
Electricity			
Control	138	12	
Accident	73	6	.94
Abuse + FTT + Ingestion	92	8	1.00
Plumbing			
Control	138	11	
Accident	73	10	1.83
Abuse + FTT + Ingestion	92	10	1.40
Heat			
Control	138	16	
Accident	73	11	1.35
Abuse + FTT + Ingestion	92	10	.92
Telephone			
Control	138	6	
Accident	73	2	.61
Abuse + FTT + Ingestion	92	7	1.81
Repairs			
Control	138	19	
Accident	73	18	2.04
Abuse + FTT + Ingestion	92	21	1.85
Other			
Control	138	23	
Accident	73	11	.88
Abuse + FTT + Ingestion	92	22	1.57

*Odds Ratio = $\frac{\text{(No. of Cases with the Item Present) X (No. of Controls with Item Absent)}}{\text{(No. of Cases with the Item Absent) X (No. of Controls with Item Present)}}$

** Presence of 2 or more of these problems is one item in the score.

TABLE 36

ODDS RATIO* OF INPATIENT CASES COMPARED TO CONTROLS FOR ITEMS IN THE MATERNAL AND SOCIAL ENVIRONMENT STRENGTH SCORE

SCORE ITEM AND INPATIENT GROUP	Total No.	No. with Item	ODDS RATIO
Mother has no health problem			
Control	138	114	
Accident	73	60	1.02
Abuse + FTT + Ingestion	92	71	1.40
Mother has more than 8 Yrs. education			
Control	138	128	
Accident	73	67	1.14
Abuse + FTT + Ingestion	92	85	1.05
Phone available			
Control	138	134	
Accident	73	67	3.00
Abuse + FTT + Ingestion	92	83	3.63
Mother from tightly knit family			
Control	138	110	
Accident	73	51	1.69
Abuse + FTT + Ingestion	92	60	2.09
Mother likes neighborhood			
Control	138	106	
Accident	73	58	.76
Abuse + FTT + Ingestion	92	58	1.72
Mother thinks neighborhood friendly			
Control	138	108	
Accident	73	56	1.09
Abuse + FTT + Ingestion	92	56	2.31

$$\text{*Odds Ratio} = \frac{(\text{No. of Cases with the Item Absent}) \times (\text{No. of Controls with Item Present})}{(\text{No. of Cases with the Item Present}) \times (\text{No. of Controls with Item Absent})}$$

TABLE 37

ODDS RATIO* OF INPATIENT CASES COMPARED TO CONTROLS FOR ITEMS IN THE MOTHER-CHILD INTERACTION STRESS SCORE

SCORE ITEM AND INPATIENT GROUP	Total No.	No. with Item	ODDS RATIO
Negative symbolic referents aroused by child			
Control	138	15	
Accident	73	16	2.30
Abuse + FTT + Ingestion	92	17	1.85
Negative response elicited by child			
Control	138	24	
Accident	73	15	1.22
Abuse + FTT + Ingestion	92	39	3.49
Child at risk of impairment			
Control	133	25	
Accident	72	30	3.08
Abuse + FTT + Ingestion	90	57	7.46
Child inadequately protected			
Control	107	20	
Accident	57	16	1.69
Abuse + FTT + Ingestion	66	38	5.90

* Odds Ratio = $\frac{\text{(No. of cases with the Item Present)} \times \text{(No. of controls with Item Absent)}}{\text{(No. of cases with the Item Absent)} \times \text{(No. of controls with Item Present}}$

TABLE 38

ODDS RATIO* OF INPATIENT CASES COMPARED TO CONTROLS
FOR ITEMS IN THE FAILURE TO THRIVE
STRESS SCORE

SCORE ITEM AND INPATIENT GROUP	Total No.	No. with Item	ODDS RATIO
Neg. or ambivalent about having baby			
Control	138	40	
Accident	73	24	1.20
Abuse + FTT + Ingestion	92	33	1.37
Child has no immunizations			
Control	138	18	
Accident	73	7	.70
Abuse + FTT + Ingestion	92	16	1.40
Child has health problem			
Control	138	53	
Accident	73	8	.19
Abuse + FTT + Ingestion	92	54	2.27
Problem with child's feeding			
Control	138	24	
Accident	73	14	1.12
Abuse + FTT + Ingestion	92	33	2.65
Mo. does not see relatives often			
Control	138	21	
Accident	73	14	1.32
Abuse + FTT + Ingestion	92	24	1.96

* Odds Ratio = $\frac{\text{(No. of cases with the Item Present)} \times \text{(No. of controls with Item Absent)}}{\text{(No. of cases with the Item Absent)} \times \text{(No. of controls with Item Present)}}$

TABLE 39

ODDS RATIO* OF INPATIENT CASES COMPARED TO CONTROLS FOR ITEMS IN THE INGESTION STRESS SCORE

SCORE ITEM AND INPATIENT GROUP	Total NO.	No. with Item	ODDS RATIO
Mo. not satisfied with birth control			
Control	138	15	
Accident	63	10	1.54
Abuse + FTT + Ingestion	92	12	1.23
Problem with child's sleeping			
Control	138	20	
Accident	63	11	1.24
Abuse + FTT + Ingestion	92	18	1.43
Problem in disciplining child			
Control	138	14	
Accident	63	13	2.30
Abuse + FTT + Ingestion	92	20	2.46
Child not legitimate			
Control	138	21	
Accident	73	13	1.20
Abuse + FTT + Ingestion	92	19	1.45
Child has "other" health problem			
Control	138	21	
Accident	73	18	1.82
Abuse + FTT + Ingestion	92	26	2.19
Father unemployed			
Control	138	17	
Accident	73	9	1.00
Abuse + FTT + Ingestion	92	15	1.38

* Odds Ratio = $\frac{\text{(No. of cases with the Item Present)} \times \text{(No. of controls with Item Absent)}}{\text{(No. of cases with the Item Absent)} \times \text{(No. of Controls with Item Present)}}$

TABLE 40

ODDS RATIO* OF INPATIENT CASES COMPARED TO CONTROLS
FOR ITEMS IN THE RESIDUAL ITEMS
STRESS SCORE

SCORE ITEM AND INPATIENT GROUP	Total No.	No. with Item	ODDS RATIO
Mo. had pregnancy end in past 6 mos.			
Control	138	44	
Accident	73	15	.55
Abuse + FTT + Ingestion	92	31	1.08
Mo.felt bad physically during pregnancy			
Control	138	48	
Accident	73	38	2.03
Abuse + FTT + Ingestion	92	38	1.31
Neg. or ambivalent about being pregnant			
Control	138	55	
Accident	73	37	1.55
Abuse + FTT + Ingestion	92	35	.92
Mo. changed job status in past 4 mos.			
Control	138	13	
Accident	73	8	1.18
Abuse + FTT + Ingestion	92	8	.91
Relatives do not live near			
Control	138	27	
Accident	73	22	1.77
Abuse + FTT + Ingestion	92	25	1.53

* Odds Ratio = $\frac{\text{(No. of Cases with the Item Present)} \times \text{(No. of Controls with Item Absent)}}{\text{(No. of Cases with the Item Absent)} \times \text{(No. of Controls with Item Present)}}$

TABLE 41

CUMULATIVE % DISTRIBUTION FOR HISTORICAL AND COMTEMPORANEOUS HOUSEHOLD DISRUPTION SCORE MINUS SELF PERCEPTION STRENGTH SCORE (+10) ACCORDING TO INPATIENT GROUP

SCORE	INPATIENT GROUP					
	Cont.	Acc.	Abuse + FTT + Ing.	Ing.	FTT	Abuse
2	1.4		2.2		2.4	6.2
3	11.6	6.8	3.3		2.4	12.5
4	23.2	15.1	10.9	2.9	16.7	12.5
5	40.6	20.5	16.3	8.8	23.8	12.5
6	51.4	31.5	23.9	23.5	28.6	12.5
7	60.1	42.5	33.7	32.4	42.9	12.5
8	67.4	49.3	40.2	44.1	47.6	12.5
9	72.5	63.0	50.0	52.9	57.1	25.0
10	76.1	72.6	53.3	58.8	59.5	25.0
11	80.4	76.7	54.3	58.8	61.9	25.0
12	85.5	79.4	64.1	76.5	66.7	31.2
13	86.2	79.4	70.6	82.4	73.8	37.5
14	87.7	79.4	73.9	82.4	78.6	43.8
15	91.3	82.2	78.3	82.4	85.7	50.0
16	94.9	89.0	79.3	82.4	88.1	50.0
17	97.8	90.4	82.6	88.2	90.5	50.0
18	98.6	90.4	83.7	91.2	90.5	50.0
19	99.3	90.4	88.0	94.1	92.8	62.5
20	99.3	93.2	91.3	94.1	95.2	75.0
21	100.3	94.5	94.6	100.0	95.2	81.2
22		98.6	94.6		95.2	81.2
23		100.0	96.7		95.2	93.8
24			97.8		97.6	93.8
25			97.8		97.6	93.8
26			100.0		100.0	100.0
N	138	73	92	34	42	16

TABLE 42

CUMULATIVE % DISTRIBUTION FOR HISTORICAL AND CONTEMPORANEOUS HOUSEHOLD DISRUPTION SCORE MINUS SELF PERCEPTION STRENGTH SCORE (+10) ACCORDING TO RACE-EDUCATION BY INPATIENT GROUP

SCORE	Non-White			White≤H S			White>H S		
	Cont.	Acc.	Abuse + FTT + Ing.	Cont.	Acc.	Abuse + FTT + Ing.	Cont.	Acc.	Abuse + FTT + Ing.
2				1.5		2.1	2.8		
3	8.1	8.7		12.3	8.3	2.1	13.9	3.8	
4	21.6	13.0		24.6	20.8	14.9	22.2	11.5	15.4
5	35.1	17.4	6.2	44.6	25.0	21.3	38.9	19.2	23.1
6	37.8	30.4	15.6	56.9	25.0	27.6	55.6	38.4	30.8
7	48.6	30.4	18.8	61.5	45.8	38.3	69.4	50.0	38.4
8	56.8	43.5	25.0	67.7	54.2	42.6	77.8	50.0	69.2
9	62.2	52.2	37.5	72.3	83.3	53.2	83.3	53.8	69.2
10	67.6	60.9	43.8	75.4	91.7	53.2	86.1	65.4	76.9
11	70.3	65.2	43.8	83.1	91.7	55.3	86.1	73.1	76.9
12	81.1	69.6	59.4	86.2	91.7	61.7	88.9	76.9	84.6
13	81.1	69.6	62.5	87.7	91.7	70.2	88.9	76.9	92.3
14	81.1	69.6	65.6	89.2	91.7	72.3	91.7	76.9	100.0
15	86.5	69.6	65.6	92.3	95.8	80.8	94.4	80.8	
16	91.9	78.3	65.6	95.4	100.0	80.8	97.2	88.5	
17	94.6	78.3	71.9	98.5		83.0	100.0	92.3	
18	97.3	78.3	75.0	98.5		85.1		92.3	
19	100.0	78.3	81.2	98.5		87.2		92.3	
20		82.6	87.5	98.5		89.4		96.2	
21		87.0	90.6	100.0		95.7		96.2	
22		95.6	90.6			95.7		100.0	
23		100.0	93.8			97.9			
24			96.9			97.9			
25			96.9			97.9			
26			100.0			100.0			
N	37	23	32	65	24	47	36	26	13

TABLE 43

ADVOCACY EXPERIENCE
ACCORDING TO PATIENT GROUP

ADVOCACY EXPERIENCE	PATIENT GROUP							
	INPATIENT					OUTPATIENT		
	Cont.	Acc.	Ing.	FTT.	Abuse	Cont.	Acc.	Ing.
% who requested Advocacy	13.8	16.4	38.2	16.7	37.5	33.6	22.3	23.1
Of those requesting Advocacy:								
% with Housing or Social Prob.	36.8	66.7	76.9	42.9	83.3	42.5	36.0	66.7
% needing immediate or Short Term Advocacy	63.2	91.7	53.9	85.7	83.3	82.5	76.0	33.3
% requiring Referral	52.6	66.7	30.8	71.4	66.7	45.0	76.0	16.7

TABLE 44

ADVOCACY EXPERIENCE
ACCORDING TO RACE-EDUCATION BY MAJOR PATIENT GROUP

ADVOCACY EXPERIENCE AND RACE-EDUC.	PATIENT GROUP			
	INPATIENT		OUTPATIENT	
	Control	Case	Control	Case
% who requested Advocacy				
Non-White	32.4	32.7	44.6	26.6
White ≤ HS	7.7	21.1	22.5	20.9
White > HS	5.6	12.8	14.3	16.1
Of Those requesting Advocacy:				
% with Housing or Social Prob.				
Non-White	50.0	72.2	44.8	58.8
White	14.3	65.0	36.4	21.4
% needing Immediate or short term Advocacy				
Non-White	58.3	72.2	79.3	70.6
White	71.4	75.0	90.9	92.9
% requiring Referral				
Non-White	50.0	55.5	44.8	70.6
White	57.1	60.0	45.5	71.4

Stress/Strength Scores: Each score is to be tabulated separately using the weight specified to the right of each variable. The scores are then to be treated as independent variables.

1. Historical Stress = 1.1 + 1.2 Maximum score					15	(Rel. Odds)
1.1 Household disruption						
Broken family						
1.1.1	0-4	C4,	Col. 9,	Code 1	2	(5.43)
1.1.2	4-16	C4,	Col.10	Code 1	1	(1.92)
	17-C	C4,	Col.11	Code 1	0	(0.89)
Mobility						
1.1.3	0-4	C4	Col.12	Code 1	2	(3.62)
1.1.4	4-16	C4	Col.13	Code 1	2	(4.60)
1.1.5	17-C	C4	Col.14	Code 1	2	(4.01)
Violence or Neglect						
1.1.6		C4	Col.15	Code 1	2	(4.44)
				Maximum Score	11	
1.2 Illness						
Mother's Ill Health						
1.2.1	0-17	C4	Col.16	Code 1	1	(2.70)
1.2.2	17-C	C4	Col.17	Code 1	1	(1.67)
Family Illness						
1.2.3	0-14	C4	Col.18	Code 1	1	(2.33)
1.2.4	17-C	C4	Col.19	Code 1	1	(2.93)
				Maximum Score	4	

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2. Contemporaneous Stress = 2.1 + 2.2 + 2.3 — Maximum Score 23

2.1 Household disruption

2.1.1.	2 or more moves in the past year C2, col. 34, code: 2-8	3
2.1.2	Recent death in family C2, col. 32, code: 1-4	2
2.1.3	Child living away from home (0-18) C2, cols. 26 and/or 27, code: 1-8	2
2.1.4	Person moved away in past 3 mos. C2, col. 30 code: 1,2,3	2
2.1.5	Marital problems C2,col. 30 code: 1	1

Maximum Score 10

2.2 Child Centered Stress

2.2.1	Child not wanted at begin of preg. C3, col. 76 code: 2	1
2.2.2	Child sep. from mo. more than few da. C3, col. 69 code: 1-4	2
2.2.3	Ch. hurts self and/or has acc. C4, col. 20 code: 1 and/or C4, col. 21 code: 3	2

Maximum Score 5

2.3 Miscellaneous problems

2.3.1	Ser/mod. health prob. (nt mo/ch) C3, cols. 38,39; 40,41;42,43; 44,45; 46,47; 48,49; 50,51; 52,53 Code: (for 1st col. in ea. pr) 1-9 (for 2nd col. in ea. pr) 1,2	1
2.3.2	Alcohol or drug prob. past and /or pres. C4, col. 25 code: 1 and/or C4, col. 26 code: 1	2
2.3.3	Legal problems C2, col. 49 code: 1-7	1
2.3.4	Financial Problems C2, col. 49 code: 1,2,3	1

2.3.5 2 or more household prob.
Count yes if two or more of the following cols. are filled in C2, cols. 38-43 code: 1 — 1

2.3.6 No MD other than ER
C3, col. 28 code: 0,3,4 — 2

8

3. Contemporaneous Strengths = 3.1 + 3.2 — Maximum Score

3.1 Physical and Social

3.1.1	Mo has no sev. or mod. hea. prob. C3, col. 54 code: 3	1
3.1.2	Mo has 9 or more yrs of ed C2, col 57 code: 3,4,5,6,7	2
3.1.3	Phone available C1, col. 26 code: 1,2	2
3.1.4	Mo frm tightly knit fam C3, col. 25 code:1	1
3.1.5	Mo likes neighborhood and /or thinks its friendly C3, cols. 23 and/or 24 code: 1	1
	Maximum Score	7

3.2 Psychological

Calculate as before the Non Ideal Mother Score based upon the Q-sort data. Note that this is to be done only for those cases where the new q-sort was used. Old q-sort cases should be treated as blanks.

The psychological score 3.2 is defined as:

10 (1 - NIMS) with only the intergral part retained. This should produce intergral scores within the range 0-20.

Thus the range on the maximum score for contemporaneous strengths (3.) should be 0-27.

4. Interviewer Ratings = 4.1 + 4.2 Maximum Score 10

4.1 Mother child interaction

4.1.1 Neg. sym ref aroused by child
C3, col. 67 code:

3.....1
2.....2
1.....3

Range (1-3)

4.1.2 Conflicting or neg responses elicited by child
C4, col. 8 code:

1.....1
2.....2
3.....3

Range (1-3)

Score + (4.1.2) - (4.1.1) + 2
Range (0-4)

4.2 Risk

Define these scores as the sum of the ratings with the following recodes:

4.2.1 Child less than adequately protected
C4, col. 30-31

1,2,3.....0
4.....1
5.....2
6.....3
7.....4
8,9,10,11.....5

Range (0-5)

4.2.2 Child at risk
C4, col. 34

1,2.....0
3.....1
4.....2
5.....3
6.....4
7,8,9.....5

Range (0-5)

5. Miscellaneous

5.1 Failure to Thrive

5.1.1	Ambivalent or neg ab hav baby C3, col. 64 code: 2,3	1
5.1.2	No immunizations C3, col. 30 code: 2	1
5.1.3	Child ser or mod health prob C3, col. 32 code: 1,2	3
5.1.4	Hlth prob feeding C3, col 34 code: 1	1
5.1.5	Not see rel often C3, col. 26 code: 3	1
	Maximum Score	7

5.2 Ingestions

5.2.1	Mo nt sat w birth control C3, col. 60 code: 2-7	1
5.2.2	Hlth prob sleeping C3, col. 35 code: 1	1
5.2.3	Hlth prob discipline C3, col. 36 code:1	2
5.2.4	Child nt legitimate C3, col. 74 code: 2	1
5.2.5	Hlth prob, other C3, col. 37 code: 1	1
5.2.6	Fa nt working C3, col. 10 code: 1	1
	Maximum Score	7

5.3 Miscellaneous

5.3.1	End of preg past 6 mos C3, col. 55 code: 2	1
5.3.2	Amb or neg phy. feelings in preg C3, col 62 code: 2,3	1
5.3.3	Amb or neg feelings ab being preg C3, col 63 code: 2,3	1
5.3.4	Mo curr job less tn 4 mos C3, col 14, code: 1,2	1
5.3.5	Rel not near C3, col. 27 code: 2	1
	Maximum Score	5

APPENDIX A

THREE ISSUES CONCERNING "SAMPLING"

1. There is no such thing as a "population of children served by Children's Hospital." Or at least the concept cannot be defined clearly and practically in operational terms. There are patients and they can be described in various ways, but they cannot be described in terms of the "population from which the patients come". There are two aspects to the impossibility of defining this concept. In the first place the Children's Hospital relates differently to the total medical care system for different diagnoses or different medical services. Thus the Hospital serves one population for rat-bite and a very different population for heart surgery. In the second place even for a specific type of service the Hospital does not serve a sharply definable population in the sense of "yes" for these individuals and "no" for those. Instead it is necessary to conceive of probalistic statements of the sort "if this individual needs rat-bite care there is a certain probability that he will get it at Children's". Such probabilities can be conceptualized but not measured.

2. The incidence of child abuse or similar phenomena cannot be measured with acceptable precision in any population at the present time. This is obviously a judgement call involving, among other subjective components, an evaluation of "acceptable precision" and of the costs of measurement by any currently known methods. The basic problem is the difficulty of establishing clear definitions for child abuse and neglect

Until we know much more about the phenomenon at a case level it seems futile to attempt sophisticated measurement of incidence in populations. Two specific exceptions to the definitional problem can be thought of. Massive x-ray surveys might be used to identify unreported abuse related fractures, and massive growth screening with testing of response to nourishing care might be used to identify neglect related failure to thrive. Both of these are unacceptably expensive from monetary and other points of view, and together they probably form such a small part of the abuse and neglect problem as to make them unacceptable as an overall measure.

3. THE PROPOSITION:

"Upper class children are subjected to (the same amount of) (more) (less)

abuse and/or neglect as lower class children" is not scientifically testable and to purport to study it renders a disservice both to medicine and public policy.

In part this proposition is not testable for the same reasons that incidence is not measureable. In addition there is the dilemma presented by the existence of both physical and psychological abuse along with the thought that the form which abuse takes may be a behavioral phenomenon which varies from one social group to another. Given the difficulty in defining psychological abuse in particular, any decision with regard to the original proposition depends entirely too much on arbitrary definitions to be called scientific.

APPENDIX B

Abstract: May, 1973 Ambulatory Pediatric Association San Francisco, California

CHILD ABUSE AND THE SOCIAL ILLNESSES OF EARLY CHILDHOOD: EVIDENCE FOR A RELATIONSHIP FROM A RETROSPECTIVE CASE-CONTROL STUDY. E.H. Newberger, F.J. Yanofsky, F.J. Klayman, M.A. Matthews. Children's Hospital Medical Center, Boston, Mass.

311 children under 4 years of age with diagnoses of child abuse and neglect, failure to thrive, accidents, ingestions, pica and plumbism, were matched individually on sex, age, and date of admission with children treated for other early childhood illnesses. 3 comparisons were performed: (1) of medical, demographic, and behavioral data on cases and controls, to generate hypotheses on the processes of cause and effect which lead to the individual "social illnesses"; (2) among accidents, generally assumed in clinical practice to be random incidents, child abuse and the other "social illnesses", in order better to define a common causal substrate, and (3) among the ascertaining symptoms within the case population, which in current taxonomy is defined by manifestational criteria, but for which an etiologic classification is desireable.

Parameters which significantly differentiated cases from controls included socio-economic status, ethnic group, marital status of parents, whether observations of parent and child were made in the record, length of stay in hospital, who paid hospital bill, and total cost of stay. Accidents and "social illnesses" were similar, in respect to maternal age, birth rank, ethnic group, age and behavioral measurements, but differed significantly in respect to socio-economic status. This suggests either a common etiology, with positive sampling bias toward cases of lower social class in the formulation of the diagnosis of "social illnesses", and especially of child abuse or a unitary causal relationship with poverty. Evidence for the former interpretation was found in the distribution of the following

attributes: source of referral, age of child, hospital specialty service, and nature of presenting symptoms.

APPENDIX E

Q-SORT ITEMS FOR EPIDEMIOLOGICAL STUDY

1. Fragile, vulnerable, brittle
2. Flat affect, bland, uninterested, indifferent
3. Idealistic
4. Worried and anxious
5. Disorderly
6. Co-operative
7. Stubborn
8. Sarcastic
9. Cruel, mean
10. Self-pitying
11. Undecided, confused, ambivalent
12. Resentful and angry
13. Dependent
14. Warm
15. Sympathetic, empathic
16. Unhappy
17. Likable
18. Manipulative
19. Ambitious
20. Intelligent
21. Reasonable, fairminded
22. Sense of humor
23. Frank
24. Sense of unworthiness, inadequacy
25. Sophisticated

26. Conventional
27. Guileful
28. Withdrawn, introverted
29. Touchy, irritable
30. Imaginative
31. Restless
32. Helpless
33. Selfish
34. Suspicious
35. Self-controlled
36. Looking ahead, planful
37. Impulsive
38. Confident
39. Energetic
40. Introspective
41. Dramatic
42. Assertive, dominant

APPENDIX F

REVISED Q-SORT

1. Fragile, vulnerable, brittle.

   Unable to withstand pressures
   Breaks easily under pressure
   Marginally coping

2. Flat affect, bland.

   Not stimulating
   Without apparent emotion
   (From: tone of voice, attitude, inflections)
   Refers to: mother's character, not to character of mother's life situation.

3. Overwhelmed.

   Frazzled
   Not knowing where to turn
   Unable to cope with current situation (Both child's medical problem and other life problems)
   (Note: This does not refer to the nature of the stresses impinging on the mother, but to her reactions to them).

4. Depressed.

   Immobilized by unhappiness
   Everything requiring too much trouble
   Not moving, stationary -- and unhappy
   Not able to make life changes

5. Naive and simplistic.

   Possessing an uncomplicated world view
   Seeking and believing in easy solutions

6. Passive.

   Lethargic, without energy
   Uninterested, inert
   Unable to act; being acted upon

7. Worried and anxious.

   Tense, nervous, concerned
   (Ratings: 7 = worried and anxious about everything, particularly child; excessively concerned about all problems
   6 = chronically worried and anxious; may refer to real problems
   5 = worried about the short term medical problem of the child (situationally dependent worrying))

8. Angry, resentful.

Angry at the world
Bitter about current situation
Feeling that one has received the short end of the stick
(From: entire life situation of mother, with particular reference to the child)

9. Rigid.

Unyielding and inflexible
Intolerant of ambiguity
Dogmatic, firm

10. Sense of unworthiness, inadequacy.

Low sense of self, low self esteem
Unhappy with self
Possessing a low evaluation of own competency, efficacy, value
(From: especially last questions)

11. Defensive.

Closed off, inaccessible
Highly self-protective
Feels attacked, vulnerable

12. Self-pitying.

Feeling sorry for one's self without doing anything about it.

13. Undecided, confused, ambivalent.

Undirected, not goal oriented.
Unable or unwilling to commit self to a course of action
(Refers to: Mother's own life, not her attitude in the interview)

14. Inconsistent.

Giving mixed messages
Self-contradictory

15. Isolated.

Without friends, contacts
Feeling alone in the world
Cut off (physically and psychologically) from other people

16. Dependent.

Unable to survive without someone to lean on
(Implies excessive need)
Needs other people around to function

17. Warm.

Relaxed, open, comfortable
Reaching out
Responsive
(From: mother's projection of self, with particular reference to her behavior with child)

18. Sympathetic, empathic.

Concerned, involved
Able to understand and respond to needs of others
(Refers to: mother's behavior with child, particularly; also her general style with other people)

19. Unhappy.

Situational and specific discontent
(Distinguish from: Depressed, which also implies immobilization as well as more pervasive unhappiness)

20. Likable.

Completely subjective interviewer judgement

21. Manipulative.

Knowing how to get what one wants from other people
Using people for one's own ends, dishonest about goals
(Distinguish from: Resourceful, which refers to mother's ability to effectively use resources)

22. Ambitious.

Showing initiative
Having and acting on hopes for self improvement and amelioration of life problems one is confronting
Looking for, and taking steps to achieve, a better life (better as defined by the mother)

23. Intelligent.

Sharp, aware, able to handle and process input
Having an informed perspective

24. Reasonable, fairminded.

Logical, not extreme
Tolerant and open-minded towards different ideas and perspectives

25. Frank.

Open, forthright
Straightforward
Honest

26. Insecure.

Unsure of self
Reacting to own projection of self with the fear of being judged

27. Sophisticated.

Smooth, polished
"With it"
Worldly wise
(Refers to: surface aspects of mother, particularly her affect)

28. Nurturant.

Warm, motherly to child
Responsive to child
Understanding and being able to respond in terms of child's needs and rhythms, and not one's own
Concerned with the practical needs of the child (health care, immunizations, nutrition, etc.)

29. Withdrawn and introverted.

Aloof
Inward-turning
Shy

30. Touchy, irritable.

Overreacting to minor difficulties and frustrations (particularly with respect to child)
(Refers to: generalized reactions to stress)

31. Restless.

Seeking life change
Having a forward momentum towards change (may be only change for change's sake)
(Distinguish from: Ambitious, which implies directed and goal oriented change)

32. Helpless.

Unable to do things for one's self
Impotent
Self-defeating

33. Self-controlled.

Being deliberate with one's actions
Responding constructively to stress
Able to cope under reasonable stress
In control of own impulse

34. Looking ahead, planful.

Giving thoughtful consideration to the future
Acting on the basis of plans and ideas for the future
Planning the future

35. Confident.

Self assured
Possessing a strong sense of self
Possessing a sense of personal efficacy and competence

36. Energetic.

Lively, spirited
Active, involved

37. Introspective.

Insightful
Self-evaluative
Aware of own motivations, needs, desires

38. Dramatic and exaggerating.

Overreacting
Overemphasizing
Making a big deal out of small deal

39. Assertive.

Takes initiative
Not passive
Able to project own feelings to make them known and understood by others

40. Resourceful.

Uses formal and informal resources effectively

41. Calm.

Relaxed, easy, at peace with self

42. Fulfilled, satisfied.

Content and unconflicted about one's life situation

APPENDIX G

ETHICAL AND METHODOLOGIC IMPLICATIONS OF SOCIAL ILLNESS RESEARCH IN A HOSPITAL SETTING:

Conducting research on child abuse and related problems in a clinical setting such as Children's Hospital raises ethical questions as complex as those faced by researchers in investigating problems of a more strictly biological nature. Issues of potential harm to the child and family as the result of clinical investigation, and the problem of assuring that the needs of researchers are not placed above those of the child and his family are elements which must be accounted for in the research calculus. In addressing ethical imperatives, it is sometimes necessary to resort to methodological compromises and second-order statistical manipulations, which, in the best of all scientific worlds, might be seen as unfortunate compromises of scientific rigor.

Notwithstanding the problems posed by studying these phenomena outside of the laboratory, investigations, such as our own, carried out in real-world settings have the potential of generating a more complete understanding both of the illness phenomena themselves, as well as the role(s) of professional people in identifying, and failing to identify, and treat these complex medical/social problems. In undertaking research either in the clinical or community context, one is acknowledging implicitly the notion that the phenomenon under study is the result of a complex constellation of biological, social, and environmental variables all of which pertain to the development of a better understanding of the etiologic process which results in the illness under study. Perhaps of still greater significance, it is in the clinical and community environment, that one has the ability to begin to effect change in the diagnostic, treatment, and management practice of professional people. The principal long range goal of the Family Development Study's work is to improve clinical practice through a better understanding of these illness phenomena; hence, the clinical and community setting, as the laboratory of choice, is dictated to a great degree

by this end.

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Professional Ethics:

The problem of informed consent was an issue which was tackled early on in the course of our investigation. Although the Family Development Study itself was not to be secured only for the purposes of conducting interviews with mothers, the possibility that information elicited in the course of the interview might serve as a basis for concern as to the potential risk of injury to a child forced us to deal with the question of what individuals, if any, ought to have access to the contents of the interview.

While it was realized that there might be times when we would feel compelled to share information with other professionals in the Hospital, we also realized that in an area in which diagnostic impressions are so subjectively rooted, and in which the potential deliterious effects of labeling a family were so real, that absolute confidentiality ought to be the operational imperative.

The consent form which resulted from our deliberations was fashioned around compromise between the competing notions of confidentiality and the limited sharing of data. (See consent form, last two pages of Appendix C, the Phase I Interview). This compromise, illustrative of the dilemmas so often facing the researcher in clinical settings, produced a consent form to which we scrupulously adhered. The procedure for gaining consent was a multi-step process:

1) Prior to contacting the mothers concerning the possibility of an interview, the physician responsible for the case was asked for his/her permission to interview the mother.

2) Secondly, the social worker involved with the family, if one had been assigned, was asked for permission.

3) Finally, the mother was contacted by phone, and if consent was secured an appointment was set up for the interview.

(In the outpatient group, this process was carried out immediately in the Emergency Room.)

Before beginning the interview, it was explained to the mothers that while all of the information elicited was to be held in strictest confidence that it was possible that information given might be shared with the physician and/or social worker if it were felt that it might assist them in the management of the case. While so instructing potential informants may have biased their responses (See below), fearing what might happen if certain types of information were shared, there was no question in our minds that it was our responsibility to inform mothers of what the potential consequences of their responses might be.

In all, in only ten out of 560 mothers interviewed was it felt necessary to share the information gathered with another professional person. In the ten instances in which this was done, the interviewer submitted a written abstract of the interview (not the original interview itself) to the physician or social worker involved. Each of these abstracts was then stamped: NOT FOR INSERTION IN THE MEDICAL RECORD. In all of the other cases, the tape recording made of the interview was erased as soon as the interview was rated, and the interview schedules were placed in a locked file, referenced only through a coded system such that the names of the respondents could not be linked to the interview form without access to the code.

Impact of the Hospital Setting on the Sample Size and Composition:

Apart from the fact that Children's Hospital services a selective population within the Boston Metropolitan area, there were other selective ascertainment factors at work which served to limit the quality, nature, and generalizability of the data generated by the Study. While the impact of these selective factors may be controlled and minimized to some extent in the analysis of the data, it must be recognized that their introduction, especially in the inpatient sample, is an inherent artifact of sampling from a clinical care giving environment.

In the Inpatient Study, the sample population on which the Family Development Study has conducted its research consists of those children served by the Children's Hospital who were admitted with diagnoses of: Child Abuse, Accident,

Ingestion, or Failure to Thrive. (In the Outpatient Study, accidents and ingestions were the diagnostic criteria used for case ascertainment.) There are several important factors about the resultant case series that must be kept in mind:

a) It is important to realize that only children sufficiently ill to require hospitalization (a visit to the emergency room in the case of the outpatient Study)were eligible for selection. This then immediately limits the generalizability of the data to those children with index illnesses whose presenting symptoms were sufficiently severe as to warrant admission.

b) Differential admission criteria may be applied to different racial and socio-economic groups by professionals operating in the Hospital setting. The result of an application of a selective racial or socioeconomic bias is to skew the distribution of the cases in the direction of the bias. Again, this systemic, or institutional bias which takes place in all institutional settings, must be recognized in attempting to draw any conclusions about the population under study. The two principal methods for controlling for this bias have been:

1) Having a broad, overlapping, set of case criteria e.g. someone feeling uncomfortable labelling a case "abuse", might still admit the child is an "accident".

2) Matching cases and controls by race and socioeconomic status.

Notwithstanding these measures, one must be vigilant about drawing comparisons between cases without reference to such variables as race and SES.

c) Consent bias: The study population consists of those mothers who themselves consented to being interviewed. Clearly, some mothers may be more likely to consent than others. The selective consent bias, which itself is further complicated by the issue of informed consent (as noted above) while present does not appear to have influenced our respondent refusal rate which was a strikingly low one percent. However, it is difficult of assess just what impact this may have had on the nature and reliability of the information with which we were supplied.

d) Bias of ascertainment related to the severity of the index child's injury and other family factors: In securing consent to interview mothers, as described above, it was necessary first to gain the permission of the physician and social worker, before seeking permission from the mother. Often in extremely complex situations, or in cases where the child's injury was particularly severe, physicians and social workers would refuse the Family Development Study interview, for fear that the interviewing process itself might interfere with the development of an ongoing therapeutic relationship with the family. Because we were committed to the idea that research priorities should never interfere with families receiving appropriate services, it was not possible to interview some of the families which otherwise would have become part of the case series. This was particularly true of the child abuse cases, in which quite often extremely complex and delicate family situations were present. As a result, our study population, at least in so far as it related to child abuse cases, consisted of cases in which the complexity of the clinical management problem surrounding the index case was perceived as less critical. While it was impossible to interview there mothers themselves, it was possible to attempt to "reconstruct" the lost interview, by speaking with the social worker involved, in order to be able to better characterize those cases which were lost.

e) Interviewer bias: Interviewer bias is often controlled through techniques such as blind interviewing. This was not possible in our series (it was particularly impractical in the outpatient series) as the difficulty of conducting an interview without reference to, and therefore without knowledge of, the child's injury was impossible.

Issues of confidentiality, informed consent, and ascertainment bias are all constraints under which the clinically based researcher must operate. The advantage of carrying out such a study in the clinical and community environment is that it provides the investigator with the opportunity to study these problems in the real world, as well as to begin to exert an influence on those involved with their management, and ultimately, their solution.

f) Availability of social and family services in a medical structure:
Of continual concern to members of the Family Development Study has been the issue of identifying families, be they cases or controls, with serious medical, social, or environmental problems for whom services have not been extended. This phenomenon is all to prevalent in a traditional hospital setting where those problems which are most likely to receive the attention and concern from the staff are those which are most conveniently diagnosed and which are most amenable to solution through bio/medical therapeutic techniques. While the social service department at the hospital is theoretically available to participate in the solution of social and environmental problems which families may have, traditionally the range and duration of services offered has been of such a nature as to preclude the active involvement of social workers in all but the most emergent situations.

Because the study population was an inherently high risk population and because it was felt that it was unacceptable to identify problems and not to attempt to mobilize resources to bring about their solution, an advocacy component, oriented entirely towards gaining assistance for families who desired it, was established. Two advocates have been involved in the process, receiving referrals from the Family Development Study interviewers, when and only when, the mothers themselves indicated that they would like assistance with a problem. Problems that demand a trained social worker, nurse, or other professional were referred to the appropriate resources within the hospital, while more concrete, environmental, life context problems were handled by the advocates themselves. (housing problems, welfare, legal, etc.)

This process has had two immediate effects:

1) It has demonstrated that there is a large population served by the hospital which has been traditionally estranged from the social services structure but in which there are many families who have problems which are inextricably tied to the medical problems of their children. The result has been that recently the Department of Social Services has become concerned with

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these families and has hired two advocates of their own.

2) It has insured that the Family Development Study is not in the position of exploiting people for their data potential without addressing their human needs.

3) It has begun the process of sensitizing other professionals in the Hospital to the needs of families which may or may not be directly related to their specific medical complaint.